

# MOTORAGE

Vol. VIII No. 23

CHICAGO, DECEMBER 7, 1905

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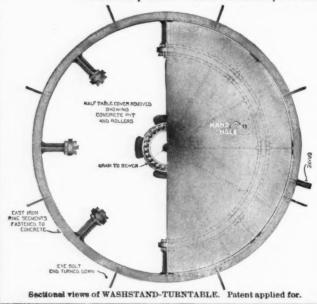
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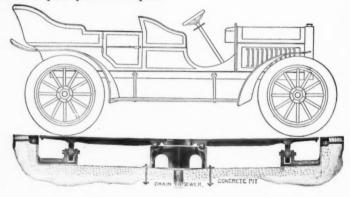
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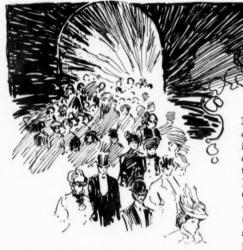
# MOTORAGE

VOL. VIII No. 23

CHICAGO, DECEMBER 7, 1905

\$2.00 Per Year

# NEW IDEAS GARNERED AT OLYMPIA SHOW



ONDON, Nov. 25-The Olympia show, L ONDON, Nov. 25-11e Criming. marked one which closed this evening, marked one of the most eventful weeks in the history of the British motor trade, for the volume of trade secured at Olympia was very much greater than was anticipated by even the promoters, or than has ever been secured, in a similar period at least, in this and probably in any other country. When the trade returns have been properly shaken down, and figures are available, it is probable that fixed orders to the value of \$7,000,-000 will about represent the actual harvest of the show, bringing the total amount of order for the British market up to nearly \$20,000,000. And there is this to be said regarding them: At the previous shows a large proportion of the sales were actual deals with the user, that is to say, the automobilist came to the stand and bought his car. In the present instance it has been the automobile agent who has come, seen and been conquered.

From almost every stand in the show the tale tonight was one of unexampled satisfaction. It shows on what sound basis the British automobile trade is fixed, when a firm like S. F. Edge & Co. can write as follows:

"Up to the time of writing—early Thursday—our total business done at the show for definite orders placed will exceed \$800,000. The bulk of this is for six-cylinder cars and we think from the negotiations in progress, that we can reckon another \$150,000 worth of orders to be placed before the show closes."

When one regards the fact that the Napier six-cylinder car in chassis form costs \$5,250 it will be seen that the British retail trade has attained a substantial condition. It will be self-evident from this statement that the policy of fixing November as the time for holding the Olympia show has been amply justified. At the same time it is felt among the retailers themselves that a spring show is almost a necessity, but they will probably prefer, for the time being at least, to have the spring shows local or district events, so that they can preserve their own customers as far as possible from outside influence.

A remarkable and unexpected feature of the week's proceedings was the number of foreign visitors, and that they have not come for nothing is evident from the fact that such firms as Napiers, Daimlers, the Star Co. and the Wolseleys have all secured foreign contracts. One of the Napier company's has been for fifty six-cylinder cars to the order of Baron de Caters and M. Fournier, who have obtained a concession of the Napier concern for France. So distinct has been the continental invasion that it is now said that the Napier, Star, Wolseley, Daimler and Humber firms will all have cars at the Paris show which opens in a fortnight. The matters just detailed would be sufficient to make any week a memorable one, but we have had in addition two floatations with the prospect of another. One of the floatations was foreshadowed in recent communications. It was that of Darracq & Co., which on presentation to the shareholders of a balance sheet showing a net profit of \$763,000 was followed by a recommendation to reorganize and extend the company by an issue of \$1,875,-000 in 6 per cent preferred ordinary shares, with 50,000 \$25 debentures carrying interest at 5 per cent; in addition, 275,000 \$5 ordinary shares will be issued presumably for the shareholders' original company as a bonus for or to enhance their present holdings. The prospectus has been issued and the money has, it is said, been subscribed, so that we may look for large developments in the contract trade in this country. In the prospectus an analysis of the figures show that the good-will stands at a figure of over \$200,000

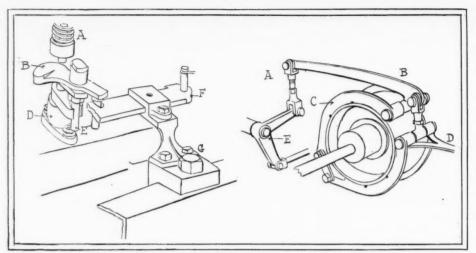
The second floatation has been one of the long-threatened omnibus promotions and took the form of an issue of 40,000 5 per cent preference shares by the London Motor Omnibus Co. The prospectus is of the usual glowing character. No profits are shown—merely estimates of the number of passengers carried and the calculated profit per car mile. How this has fared up to the moment of writing is not known, but it is significant that those with the greatest motor trade experience are the most reticent in discussing the matter.

According to the prospectus, the profits of the company—which proposes to run 300 buses over 100 miles per day in London—should amount to about \$500,000 per annum. According to many equally good judges perhaps the profits will not amount to as many shillings.

The week just ended has been one of the continued series of dinners and similar festivities and celebrations. First of all, the Clement led off on Monday, then followed the Darracq company, then the Motor Union of Great Britain and Ireland, next the Argyll Motor Co., Ltd., and finally the automobile club itself. This club affair was a very swagger function and included in the list of speakers Whitelaw Reid, the American ambassador at the court of St. James. Every other speaker was a similar distinguished personage, not always great in motoring, but in these matters it is just as well to get out of the groove of shop and to listen to what other people think of the automobilists.

And now we come to probably the most





HOREICK INLET VALVE CONTROLLER

ENFIELD PROPELLER SHAFT BRAKE

important feature of Olympia to everybody concerned-that is, the fall in prices. These, it may be pointed out, are not so general as it would appear on the face of matters. The majority of firms have not adopted what we may consider the more sensible form of giving improved construction and larger engine powers for the price charged last season, but those firms who have not or do not intend to make any serious alteration in their cars have come down generally to the extent of about 18 or 20 per cent. When firms like the Daimler and Panhard & Levassor do this, it is a lead that others will have extreme difficulty in refusing to take. Reputations to a large extent control prices, no matter what the particular developments in construction may effect. Smaller makers, however, have found it necessary to raise their prices. This has been no doubt the result of too sanguine reduction last year. The Coventry Humber car, which last year sold for \$1,125, has been slightly increased in power for 1906 and now sells at \$1,350, and similarly with many others.

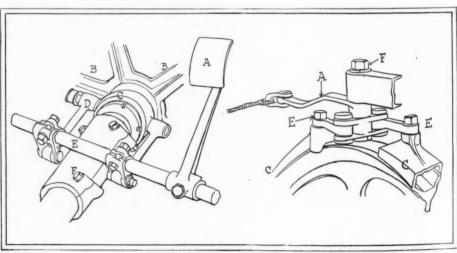
Smokelessness and silence are two points which are usually dealt with together in discussing a motor car, although the matters with which they are connected and from which they arise are scarcely linked together. Smokelessness arises, as we all know, from excess of lubrication; noise may arise from insufficient muffling of the exhaust, worn car wheels, rattling chains or a too flimsy construction in frame work of the car. Since the emission of smoke is now an offense against traffic laws, the question of lubrication has been very thoroughly overhauled, especially in the larger cars. Heretofore the manufacturer of this type simply assured himself that he was sufficiently lubricating his engine and incidentally every other part as well, and the emission of smoke as a result did not concern him, and as a consequence some cars, and very high-priced ones, too, have been grave offenders in this form of nuisance, but reformation has come almost at a bound. In some, while still maintaining what is recognized as an excess of lubrication overflow, arrangements are provided by which this excess is taken away and returned, after being filtered, to the lubrication tank. By thus preserving the lubricant in the crank chamber at a constant and known level, MINERVA CLUTCH MECHANISM

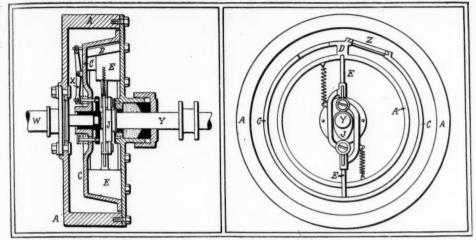
the entrance of surplus oil into the cylinders is practically prevented. But as has been pointed out in a previous paragraph, on show matters, the automatic form of lubrication which became so universal last year was found to have its drawbacks quite apart from the matter of smoke creation. Consequently, there has been a distinct reversion to simpler forms requiring, it is true, more care and attention from the chauffeur, but nothing that might not be expected from a more general knowledge of the requirements and necessities of the modern motor car. This has enabled designers to clear away a large number of pipes which wandered through, as a rule, from the dashboard all over the engine and through the frame. In some eases, while a number of these lubrications leads are retained, provision is also made for hand lubrication. It is also noticeable that greater attention has been made to secure oil-retention in such parts as are usually described as oil-retaining. Consequently the cleanliness of the car has been greatly improved to the benefit of its owners and those friends whom he may visit and of the garages it may be stored in. Most of the pressure systems still rely upon the exhaust, but this will probably be dispensed with in the near future as it has been found, especially in small cars, to work its way into the lubricant and the lubricator glasses, thinning the oil and steaming the glasses. A positive pump with regulated flow is the proper system, it is contended.

In the matter of silence, the comparative abandonment of the chain drive is certainly the most outstanding feature. Chains, when even slightly worn, rattle, and cause an irritating vibration in small cars. In the larger vehicles, chain cases will be general, the chain being retained, principally because of the difficulty of conveying high powers through the central bevel drive. A more accurate conception of the functions of the silencer has also led to better designs in this part. The expansion chamber is not, as used to be the case, carried straight away to the back of the car, but is, generally speaking, placed as conveniently near to the exhaust ports as possible, and from there a tube of generous diameter conveys the expanded exhaust to the rear of the car. There is, it is claimed, an inertia in this method which helps to relieve back pressure in the cylinder as well as to secure the noiselessness so much desired. Providing a direct drive on the top of the gear is also a minor aid toward this, but in the properly designed car this is little more than a talking point for the salesmen's use.

In the matter of steering gear the chief effort has been directed toward providing adjustment for wear in the worm gear. In some of these great ingenuity has been displayed and there is no doubt that with ball-bearing steering the modern car is an easily controlled vehicle in comparison with the model of even a few years ago. In some cars a steering link connection has been brought behind the front axle in order to preserve it from injuries, as A is found that the front axle in this case serves the purpose of a guard. It is still evident that this is one of the weak parts of the car. Steering gear failures, especially in heavy or large vehicles, are too frequent and we may look for some very important improvements in this matter in the future as a result of the show.

Ordinary high-tension ignition seems clearly destined to be superseded by the magneto. There is no doubt that the motorist desires to be independent in every possible way, and the magneto system naturally makes him independent of his accumulator-charging stand, but the whole matter is yet in a rather undecided condition, although some manufacturers brush





CROSS SECTION AND PLAN OF SPARKS-BOOTHBY HYDRAULIC CLUTCH

it aside with the assumption that the hightension magneto solves the situation. But there are some who still pin their faith to the low-tension system, and do not even attempt of a variation in the timing-the Arrol-Johnston, for instance. Still, the high-tension magneto is considerably the more popular and is to be seen on almost every car above \$7,500 in price as a standard. It is usually provided with ordinary high-tension, either as a reserve or an alterative form of ignition. The single coil with high-tension distributor enables this to be done simply and neatly. Of high-tension magneto systems there are quite a number; notably the Basse-Michel, Gianoli, Simms-Bosch, Rankin-Kennedy. Each has this point of novelty, each claims to be superior, but all seem to give equal satisfaction.

The inlet valve on the Horbick car is arranged with a swinging wedge-plate B, which passes under the valve stem A and is operated by a sliding bar F, controlled from the steering wheel. The wedge-plate swings upon a stud C, underneath which is a guide E. When the sliding bar F is moved it swings the wedge-plate under the valve stem and the valve cam tappet D strikes the wedge-plate, thereby raising the valve stem. The wedge-plate is held in place by a lever on the steering wheel and the thickness of the plate itself varies the lift of the valve. The entire mechanism is supported by a frame bracket G bolted to the motor.

A powerful brake is fitted to the gear shaft extension on the Royal Enfield. On the shaft is a heavy, wide-faced drum of generous diameter. The operating lever B is connected to the foot pedal by means of a rod and a bell crank E, so as to give it a downward pull. Between the bell crank and the lever is a turn-buckle A for taking up slack.

Decidedly novel is the clutch-operating scheme on the Minerva car. The pedal lever A is connected with the rocking shaft E in the usual manner, but the clutch collar C is moved by trunions D D, which are connected to clamps on the rocking shaft. The webs B of the flywheel are shown in the illustration. The clutch spring is covered by a housing F, which is held in place by four studs E.

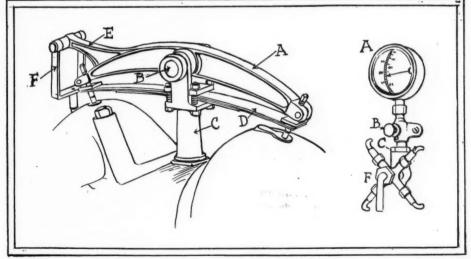
On the Morgan car—a debutante in the hands of a big London coach-building house—is a novel clutch. It is the

Sparks-Boothby. It is called a hydraulic clutch, but in reality it is an oil-power device, as oil substitutes water in its application to motor car construction. Like the disk types, it admits of careless use without injury, but it is neither as simple nor as cheap to construct. A circular cylinder or annulus is formed at the rim of the flywheel A, which is the driving member, and the pallets E, which fit this annular chamber and act as pistons, are really part of the driven member of the clutch C. A stop D forms a partition of the circular part of the annulus, and a valve Z is so constructed to allow the oil to circulate around the stop D, and is controlled by the movement of the clutch pedal. So, supposing the whole of the flywheel casing to be filled with oil, which would of course include the annulus, if the driving member A is rotated, the driven member C must also rotate, as the oil which fills the annulus cannot pass either the pallet E or the stop D and valve Z until the valve is opened by depressing the foot pedal. But upon the valve Z being opened the oil is allowed to freely circulate, and no power is transmitted. As the pallets E approach the stop D they are automatically and alternately removed by the cam J from the circular part of the annulus, thus avoiding collision with the stop D. A free clutch is assured by allowing the driven member C to be pushed out of contact with the driving member A by a further movement of the clutch pedal after the valve Z is fully opened. There are two types of this clutch. Type A has the valve which controls the amount of slip operated from the exterior of the flywheel face. In type B the valve is within the case, and is operated by the small lever X through the shaft Y being pushed towards the interior of the case by means of the clutch pedal. In either case when the valve Z is fully opened the inner member is pushed out of contact and allowed to run free. As the requisite amount of slip is determined by the orifice permitted at the valve Z through which the oil must pass, it is clear that slip can be allowed to any extent, as oil cannot be injured by simply being passed through an orifice.

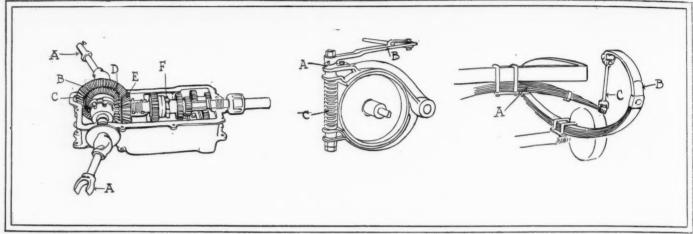
A somewhat novel scheme is introduced in the 1906 Fiat for actuating valves. This is a tappet in the form of a walking beam A which is carried on a stud B supported by a standard C between two cylinders. Beneath the stud and over the main portion of the standard a flat four-leaved spring D is clamped, the ends coming in contact with adjusting screws in the end of the walking beam. On one end of the walking beam is a lug E, to which is attached a link F connecting the push rod.

The emergency brake on the Thorny-croft car is substantially and simply constructed. The ends of the band C are connected by links E to a cross arm made integral with the operating lever A, to which is attached the cable running to the hand lever on the side of the car. The cross arm turns on a stud F locked to the brake carrier.

When an engine begins to lose power the difficulty of locating the fault is often so great that it is generally not attempted until the run is finished. The usual practice when a fault in the engine is suspected is to cut out one or more cylinders by preventing the ignition of the charge, and thus by a process of elimination to eventually arrive at the fact that a cylinder is either not working at all or is developing little power. The Gibson power indicator provides a handy means for reading the pressures developed by any particular cylinder while actually performing its work. The apparatus consists of a pressure gauge A, combined with a non-return valve D, a leak serew B, a drain cock E, and a cock F,



VALVE TAPPET AND SPRINGS ON FIAT MOTOR



PILAIN GEAR AND DIFFERENTIAL

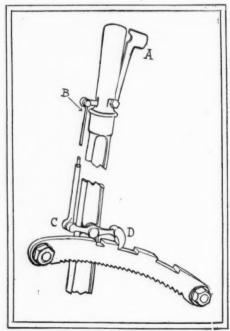
VAUXHALL BRAKE SCHEME

C SPRINGS ON C. G. V. CAR

with connections corresponding in number to the number of engine cylinders. A small bore copper tube is carried from the compression plug hole of each cylinder to one of these connections. If the cock F is turned so as to connect any one cylinder with the indicator, then any pressure produced in that cylinder will cause a small quantity of gas to register on the gauge, which registration remains. If the leak screw B is released further pressure developed within the cylinder will be reproduced on the gauge. If the ignition in any cylinder is not perfect the action of the finger will be erratic, rising a considerable distance and slowly returning to compression pressure, then again rising and so on, whereas if perfect the beat of the finger will be quite regular. If ignition does not occur at all the pressure registered by the finger will be that of compression only. If pre-ignition is occurring the pressure shown will be considerably higher than normal, accompanied by knocking. If the valves or piston rings are leaking the pressures developed will be regular, but not as high as usual. If the inlet valves are stuck shut the indication will be a very low pressure, less than normal compression. If the exhaust valve is stuck open the indicator will remain at zero.

One of the cars at Olympia which attracted considerable attention, particularly from colonial exporters and traders whose customers lie amongst the professional classes, was the Adams-Hewitt 9-10-horsepower car. This is regarded by some judges as being the most promising type of motor vehicle for our colonial markets, and for that reason may interest the American trade. To start with, it is clearly a copy of the American design which finds such popular utterance in the Cadillac and Oldsmobile cars. It is, however, distinctly of British manufacture. The works of the Adams-Hewitt Mfg. Co., which markets it, are at Bedford, about 40 miles north of London. The wheel base of the car is 6 feet 8 inches and the wheel gauge 4 feet 2 inches. The body springing plan is of the Cadillac design, but we here prefer to call it the Lanchester, since it was on that car the design was first exploited. The car body, engine, etc., are mounted on an ordinary channel steel frame, which in turn is mounted on longitudinal laminated springs running from axle to axle. The engine is a single cylinder horizontal, with a bore and stroke of 4¾ inches and 6 inches, with mechanically operated valves, situated on one side, both very accessible and each interchangeable with the other. The engine runs at 1,000 revolutions. Water cooling is positive gear pump with water tank containing sufficient capacity for a 60-mile run and radiator placed below the frame of car points, which seem to catch the colonial buyer, at

A very massive flywheel 22 inches in diameter is set at the right hand side of the crank chamber. To the right of it is the chain sprocket, which drives direct on to the differential gear on the back A planetary two-speed gear is adopted and the operation of which is entirely controlled by pedals. In the planetary there are five gear wheels of external cut and always in mesh, the whole being enclosed in an oil-tight cast iron circular box of about 12 inches in diameter, 5 inches in width. The speed control is extremely simple. Three pedals are provided. Each pedal is connected with a brake drum on the planetary gear corresponding to the gear desired. By pressing one pedal forward, the first speed is ob-



DE DION LEVER AND QUADRANT

tained. By releasing that and pressing another the high speed is obtained. The third pedal acts as a brake up to a certain point—at which the car has come to rest—then the reverse gear is put into operation by further pressure on the pedal.

One of the most inspected cars was the Pilain, in which several novel ideas were disclosed. The engine of 20 horsepower had a power transmission to the driving wheels similar to that which has been in use on the smallest of the de Dion cars. A countershaft with universal joints formed with the differential gear conveys power from the gear box to internally toothed pinions fixed to the hubs of the driving wheels, the car itself having two solid axles. This transmission is not quite a novelty, although its application to an engine of such power constitutes a radical departure, but it is in the gear box which the most remarkable portion of the Pilain is to be found. In this a direct drive is provided on second and third speeds, the latter being the top speed. This is secured by mounting two concentric bevel pinions C and B on the differential bevel pinions D and E, the gear shaft running on ball bearings. The operation of these is very ingenious and apparently substantially worked out. One of the parallel bevel pinions D takes up the drive for the top speed and the other E takes up the drive for the second speed, the sliding speed pinion having two dog clutches, one on its forward face and the other on its outside circumference. When the third speed pinions are in engagement the outer dog clutch engages with the shaft of the forward of the two bevel pinions E, which transmits the drive through the larger of the two bevels B on the differential shaft. The same sliding pinion thrown further in disengages from the one bevel pinion, and the dog clutch on its face enters into and engages with the clutch on the rearmost bevel pinion D on the gear shaft, which has been up to this running This now transmits the drive to the inner of the two concentric bevels C on the differential shaft, consequently the drive is again direct and at a higher rate of speed at the road wheels.

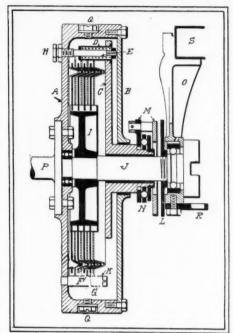
The new de Dion change speed lever motor is like no other on the market. The operating lever has a simple fore-and-aft motion, but it is provided with a trip action which makes very easy changes and prevents

careless or maladroit handling. A spring hand grip lever A through the trip D prevents any change speed motion until it is forced by being pressed into the change speed lever handle. As soon as the trip is out of any of the notches the lever can be moved to the required gear notch in the quadrant. Q corresponds to the reverse gear. The N end of the next notch finds the gears out of engagement and to put in the first speed it is only necessary to pull forward the lever until the trip catches against the forward end of the notch. Similarly when in the third notch at the forward end the second gear is at work and when pulled back to the other end of the notch the high gear is in train.

A departure from ordinary methods in brake construction is found in the Vauxhall. The brake drum is attached to the countershaft in the usual manner and the bands are connected by means of a bolt C passing through the spring, which serves to spread the bands when not in action. One end of the bolt is made with a ratched-faced bearing A, with a corresponding section on the end of the brake lever B, which is connected with a rod running to the foot pedal. A slight movement of the pedal operating the lever brings the two ratchet-faced sections into action, which causes the brake bands to clamp over the drums.

As previously stated, there is some inclination to return to the use of C springs, particularly for continental use. A C. G. V. chassis is shown which has C springs and a transverse spring A supporting the frame of the car at the rear. The ends of the transverse spring and the ends of the C springs B are connected by a long rod C with double spring shackles and means for taking up any settlement in the springs themselves. This car is fitted with internal expanding brakes and the steering wheel is on the left side, with the controlling levers in the center of the driver's seat.

The flexible joint to fore-and-aft ends of the propeller shaft on the Legros & Knowles cars are novel. Fitting over square ends of the driving and driven shafts are two armed forgings, and set at right angles to them are bridge pieces bolted to the propeller shaft by flanged couplings. Between these forgings are introduced three spring steel plates and two cross coupling rods, secured together by rivets and grouped so that the first plate has two opposite cor-



HELE-SHAW DISK CLUTCH

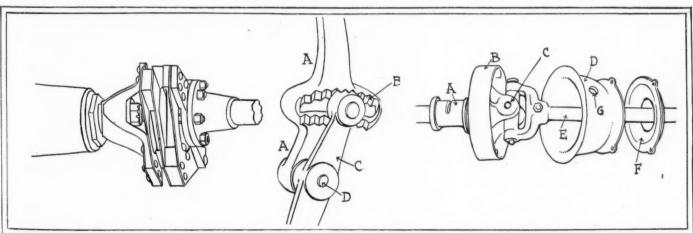
ners fixed to the first forging and its other two corners to the first coupling rod. The second plate is similarly held to the front coupling rod and at its other opposing corners to the second coupling rod. The third plate is similarly disposed between the second coupling rod and the other forging. By this form of construction power can be transmitted through all three plates in sequence, each plate being free to bend to any torsional force. This freedom of motion in the three plates, alternating at right angles in each, provides the necessary universal motion. There is nothing but purely molecular friction engendered and so little of that that the life of the joint must be practically indefinite.

The Hele-Shaw clutch is the most popular form of disk clutch among British designers and is used by some continental motor car manufacturers as well. It consists of two series of thin steel plates of V-section, one-half being attached to the driver and the other half to the driven member of the clutch, the two series alternating. When frictional contact is established the whole revolves as one mass, transmitting the engine power to the gear shafts. The plates run in oil and the flexibility of the clutch—which permits of the most careless use

without jar or strain on the gears-is due to the oil getting between the disks and having to be forced out before complete frictional contact can be established. In the illustration P is the end of the engine crankshaft, to which is bolted the flywheel A. A series of studs K in the wheel engage with notches in the set of plates F. These are in frictional contact with an alternate set G. Notches in these latter engage with projections on the wheel I, which is fixed to the driven shaft J. The sets of plates are kept in contact with each other by the springs E acting on the bearing plate C. The clutch is released by the push pedal acting through the ball race N, and so drawing out the plate C. Small bent springs arranged around the edges of the plates F help to free them from each other. When the clutch is fully released the disk L is brought into frictional contact with the surface of the part M, ensuring the quick stoppage of the shaft J should such be necessary. The springs E can be tightened, increasing the driving power of the clutch by drawing back the screws H, care being taken to do this equally all round.

On the Argyll car there is a somewhat novel scheme for adjusting the pedal levers used in operating the clutch and brakes. The lever A itself is made in two parts with a toothed sector B for adjusting the angle and length of the pedal push. The lower end of the combination C is held in place by a stud D, and a lock nut, which is loosened when adjustment is made by moving the loose end of the combination lever so that the teeth on the inner side thereof mesh with those in the sector. It is in a manner similar in operation to the link motion used in locomotives.

The Humber people have a neat way of protecting the universal joint on the propeller shaft of their Coventry car. The gear shaft is keyed to an extension in the form of a flange A, which connects with a large band-like piece B on the end of which is one section of the universal joint C. This large band is made for the purpose of carrying an aluminum cap D, which is bolted to it and covers the joint. The propeller shaft E projects through a large opening at the other end of the cover and over this is a plate F with a hole sufficiently large to permit the shaft to revolve. In the cover is a hole G so that the universal joint may be oiled.









#### A SIMPLE REMEDY FOR MOTORPHOBIA

MOTOR AGE has repeatedly shown that motorphobia exists to an alarming extent in the city of Chicago; even the existence of the winter months has not altered matters to any appreciable extent. Supplementing the howl of press and publie about excessive speed, a wise judge has informed a grand jury that a motorist responsible for the death of a pedestrian could be deemed guilty of manslaughter and has charged the jury to look into such

This state of affairs has been brought about chiefly by the attitude of some of the daily papers, which have shown an unreasonable amount of bias, with extreme care taken in misstatement of facts in many cases. There are, and there always will be, careless and reckless motorists, but the person who walks the streets of Chicago cannot be impressed with the idea that automobilists in general are in any manner guilty of heedlessness, recklessness or carelessness.

The biased impressions that exist in Chicago and elsewhere have been allowed to grow because of a lack on the part of the automobilists and automobile clubs in making effort to counteract these impressions. There is much that could be done by automobilists to remove these im-

The papers of Chicago which howl the most are quite as guilty of infractions of the law as are some of the reckless automobilists of whom they complain. American on Thanksgiving day employed a prominent retail automobile tradesman to use his fastest car to carry papers containing the result of the football game to Marshall field, some 7 miles away, before the crowd could leave the grounds. It is told that the automobile in the service of this member of the motorphobia press tore down Michigan avenue at such speed as to absolutely sweep the roadway free from dust. Another paper, the Chicago Tribune, the most rabid motorphobist of all, employs a chauffeur to drive a car in its own service. But it has never told to this day that its own chauffeur was arrested and fined for breaking the speed ordinance.

The papers that howl against the automobile have not vented their spite on the traction companies which permit their monster cars to run at frightful speeds over the public highways. They have not editorially complained about a car which, a week ago, while running over 20 miles an hour in the downtown district, crushed the life out of a woman. They have not editorially demanded that drivers of horse-

drawn vehicles be licensed and their vehicles numbered and that they be compelled to keep awake while on their vehicles. They did not seriously complain when a hose cart loaded with firemen dashed into a farmer's rig while the farmer was asleep on his seat and the horse was taking its own course. There are other things they have not told, and while all this has been going on the motorists and those interested in the automobile trade have made no attempt to remedy matters or to change the impressions that are being formed in the minds of the people.

It may not be generally known that according to section 1443 of the municipal code of the city of Chicago "it is unlawful for any owner or driver of any automobile, truck, dray, cart, carriage, bicycle, motor cycle or other wheeled vehicle to use the streets of the city of Chicago without having displayed-until daybreak after the hour of 8 p. m. during the period commencing April 1 and ending October 31 and until daybreak after 6 p. m. during the period commencing March 1 and until March 31-one or more lights." Here is an ordinance that has never been enforced, except against automobiles, since the days of the popularity of cycling, notwithstanding the fact that it is positively dangerous to even operate an automobile on the public highways at night because of the absence of lights on other vehicles. The Chicago Automobile Club and the motorists have made no effort to secure the enforcement of this ordinance in full.

The motorphobia press has said nothing of the miserable streets that Chicago owns; it has said nothing about the lack of traffic regulations on the streets, but it has seemingly vented its spite upon the hundreds of automobilists who are innocent, as well as the few who are guilty. The Chicago Automobile Club is supposedly a representative affair. Since a year ago, when the attempt was made to secure the passage of a state law governing the use of automobiles, the organization has made little effort to provide anything that could be consistently construed as being beneficial to the automobile community.

Every case which has been before the



courts has been defeated in some manner, chiefly on technical grounds, which would indicate either a lack of knowledge or a lack of study on the part of those handling the legal end, for the courts themselves have intimated that the laws and ordinances which now are supposed to regulate automobiles are more or less illegal and unconstitutional. It would seem to the ordinary mortal that an organization of motorists should, after its several defeats, begin to realize its own lack of ability and its own apparent self-satisfied position.

Would it not have been wise to have secured legal talent of great experience to cope with that which the great municipal corporation of Chicago naturally secures in cases of this kind? If motorists would even now make an effort to have the ordinance above referred to enforced much of the howl against automobiles would soon die away and there would be no need for a court to talk of manslaughter. Furthermore, automobiling would be considerably benefitted were this and other similar organizations to assert themselves to the extent of disciplining their own members, as they have promised and threatened to do many times.

In this connection it may be said that the retail tradesman guilty of sweeping the streets of Chicago for the benefit of a motorphobia press is a member of the Chicago Automobile Club and should be the first to feel the heavy hand of the organization if it is sincere in its efforts to suppress the heedless and the reckless. It cannot be supposed that a club would be guilty of overlooking such an act. A fine, even if the maximum, would be of no effect, simply because the amount of the fine probably would not anywhere nearly equal the amount paid for the use of the automobile on the occasion referred to. If the clubs can conscientiously permit members to violate laws in this manner, if they can conscientiously permit authorities to religiously rub it into automobilists, then these organizations are by no means representative and are not entitled to consideration on the part of the motorist.

An automobile club is not like the cycling club of old-it lacks competition. cycling was in its infancy clubs were formed all over the country, the clubs banded together and when their rights were trampled on the clubs simply stood up and howled and demanded and then secured what they wanted. At times they were compelled to resort to mass meetings to help along the cause, but they got there. The automobile clubs might pattern after

the cycling clubs of the '90s.

It will require a few years more of abuse to arouse motorists to the sense of duty they owe to themselves and to their neighbors. When they have been sufficiently abused and unjustly condemned they will wake up and attempt to change things that ought to be changed now. To wait is to permit dangerous precedents to be firmly established. There is a demand now for sharp and decisive action on the part of every motorist and every motoring organization. This must come soon and the sooner the better; it is imperative if motoring is to exist, if it is to be enjoyed, if it is to be brought successfully into the commercial field.



A Florida Enchantment is no longer a book—it is a reality.

#### 流 流

What a business Aladdin could do if he were modernized enough to cry "new cars for old" instead of lamps!

#### 流 流

One more combination of letters to struggle with—P. A. T. A., meaning the Philadelphia Automobile Trade Association.

#### 災災

New Jersey ditches are undoubtedly one step in advance of Chicago's bump the bumps, but they certainly make this twentieth century resemble in a way the days of the Spanish inquisition.

#### 44 44

Scorehing through the city streets to catch a crowd at a football game is fine business from the standpoint of enterprise, but hardly consistent with the editorial views of a daily newspaper, Mr. Hearst.

#### 烂 烂

Instead of the "charger impatiently champing his bit" it is the motor car "throbbing like an ulcerated tooth," according to one English show writer. He must be the same chap who writes about "luridly leaping flames" in describing a fire in an American city.

#### 姓 姓

General Greeley, chief of the United States signal service, is a convert to motoring. There should be no reason to complain of the weather from this time on,

with such a distinguished ally on the automobilists' side. Glidden would better get the general to act as pacemaker for next year's tour when the weather is the chief consideration.

#### 12 12

Out Chicago way they have discovered that all is not gold that glitters. Actually a motorist has been found who was unable to pay a fine for scorching. Some magistrates evidently imagine such a person never existed, judging from the loose and careless way they impose pocketbookwrecking fines. When some of these justices and policemen discover that the motorist is only mortal after all and that the man at the wheel is no Cresus, then we may expect sane legislation.

A. G. Vanderbilt, gossips say, is building a car capable of doing 152 miles an hour. If this speed is developed the next thing in line will be a machine that will get there before it starts. That'll be going some.



Rumor from Detroit says certain members of American Motor Car Manufacturers' Assoclation are organizing a tire manufacturing company.

Oscar Hedstrom, on Indian motor cycle,

Oscar Hedstrom, on Indian motor cycle, smashes 25-mile road record, doing distance in 32 minutes 24 2-5 seconds.

Philadelphians practically decide to hold their show in National export exposition building, March 3 to 10.

England announces tire test for next spring, experiments of pneumatics and solids being included in plans.

Henry Souther, A. L. A. M. metallurgical engineer, cutlines plan of campaign to learn steel secrets.

New Jersey motorphobists plan ditches instead of bump the bumps to stop scorchers. Aerocar Co. announces its plans for construction of air-cooled cars in Detroit.

George E. Bradbeer, in Premier runabout. wins hill climb at Riverside, Cal. Senator Morgan plans extension of southern

circuit into Cuba; racing gossip.

Monarch Automobile Co., of Aurora, Ill.,

placed in receiver's hands.

Transcontinental Tourist Megargel checks in at Los Angeles, Cal.



Motorphobia can be cured, but the only way to do it is to stop scorehing.

#### 张 柒

Football having climbed to a rear seat, motoring will now have to put on goggles and face the glare of the calcium.

#### 烂 烂

With the Philadelphia motorists caught by the conflicting state and city laws, it is evidently a case of if you do you don't.

#### 災 災

Talking of \$7,000,000 worth of business at the Olympia show makes one suspect Ernest Terah Hooley is again loose in the land.

#### 姓 姓

One might imagine that Ponce de Leon's fountain of youth has been discovered gurgling out of the sands of Florida if the rush for accommodations at Ormond can be taken as a criterion.

#### 災 災

John Bull can strut around from November 25 to December 8 with the proud satisfaction that he has promoted the greatest automobile exhibition ever held. In passing it might be mentioned that the Paris salon starts December 8.

#### 災 災

It isn't so many miles from Pittsburg to Syracuse, as far as distance is concerned, but in time the two towns are a full century apart, as is shown by the fact that a country Ike near Pittsburg is fighting the wide tire law, while around Syracuse the

farmers are working to have a wide tire law put on the books and enforced. Just such instances as this show how some sections learn sense quicker than others. Mr. Farmer should make a run for the band wagon.

災 災

England's proposed tire test strikes the American as one of the most sensible things ever attempted in the motoring line in that country. Anything that will help the man of moderate means enjoy the sport should receive hearty support from the trade and if perchance something is done to bring out a solid tire that will hit it off right for the poor chap, so much the better for the game as well as for the car manufacturer.

### MOTORISTS CAN SECURE GOOD ROADS

If the good roads movement is to grow, work among the farmers is absolutely necessary; there must be a campaign of education. The value of the farm lands in the United States is \$6,133,000,000, the value of crops to be moved each year is not less than \$4,707,000,000. Practically all of this must be moved to some extent over public highways. In addition, the value of horses is figured at about \$1,222,000,000; so the farmer is not so badly off as one might suppose.

The government has proved that a single horse can haul on a good macadam road 6,700 pounds; that on a dirt road it can haul but 3,300 pounds. In other words, a farmer must keep two horses to do the work one could do on good roads. It costs the farmers \$946,414,665 to move their products; on good roads it would cost about 40 per cent of this.

The farmer might save 60 per cent were he wise.

Yet, with these figures staring him in the face he is opposed to good roads simply because he fears automobilists will enjoy a ride over the highways he has improved. In New York state 100 miles of road can be built under the state aid plan so that the man who owns a \$3,000 farm will pay only about a single dollar as direct tax and not over 25 or 50 cents as his share of the state's proportion taken from the general taxes.

If the automobilist will acquaint himself with a few such facts and will take the trouble to talk to farmers whenever opportunity offers, converts will be made gradually and the opposition on the part of the farmer will be eliminated. It is up to the automobilist to secure good roads in this way.

#### CIRCUIT IS GOING INTO CUBA

#### Senator Morgan, Reassured by Appropriation of \$5,000 by Havana Council, Plans Extension of Southern Racing—Great Interest Displayed in Ormond Meet

New York, Dec. 4-That Senator Morgan's southern circuit will be extended to Cuba now seems assured. A brief press cable brings the all-essential news that the Havana municipal council has appropriated \$5,000 toward the promotion of the Cuban tournament. It may now be explained that the insiders, while sure that Morgan's luck and hustle would pull the affair through somehow, have known for some time that the running of the meet was entirely dependent on the Havana council making a liberal appropriation for it. The somewhat disturbed political situation in Cuba did not give much encouragement that such action would be taken unless strong pressure was brought to bear. Morgan, when the cable came, was about to get a move on himself to this end, as he did last year when he obtained the government permission for the use of the military road, which the Havana automobilists themselves had failed to secure. It must be understood that Senor Conill, who is still in this country, had told the senator that he must not depend on him for a guarantee of the expenses, a big deficit having been on the shoulders of the club last year, amounting to several thousand dollars, the profit from the grand stand having been far short of meeting the cost of the race.

Senator Morgan will now proceed at once to get out his entry blanks. The distance of the race has been extended to This will necessitate four 200 miles. trips over the 50-mile course between Arroya Arenas and San Cristobal unless the projected road be built, affording a loop and enabling the race to be made a continuous run instead of a 50-mile relay affair. How perfectly the race was managed, how well the course was policed by the rural guard, and what a magnificent stretch of smooth highway comprised the course was told fully by the writer in Motor Age's story of the initial event published last February.

With the floral parade taking place on Sunday, February 4, the tour of the island the 3 days following and the gymhkana on Friday or Saturday with the big race on Sunday, February 11, and the sprint race on Monday, February 12, it will mean but a fortnight added to the week at Ormond and assure racing men and race followers getting back to New York or Chicago by February 15.

The program of the sprint races, which will be run on the military road between Guanajay and San Cristobal, where there are the best stretches of racing ground, will probably consist of races at a mile and 1, 5 and 20 kilometers.

Already the participation of Lancia and Fletcher with the Fiats, Foxhall P. Keene with the Mercedes, Walter White with one and perhaps both of the White steamers, and one of the Darracq Vanderbilt race cars seems practically assured. Senor Conill has leased a Clement-Bayard racer from the French factory to represent him in the Havana cup race, which Carricaburu won for him last year with a Mercedes. Other Florida entrants are pretty sure to extend their campaign to Cuba.

It is stated on authority usually well informed that there is no doubt now of the participation of W. K. Vanderbilt, Jr., in the Florida races, while his name continues to be connected with the proposed Darracq 2-miles-a-minute candidate. Another story has it that he may be the pilot of the great Mercedes racer, which Clinton R. Mabley says the Connstadt factory is building for the Ormond-Daytona meet. The young millionaire made his 39 seconds mile in 1904 with a Mercedes and was naturally considerably cut up last January that the same make failed to bring to him the record-cutting that fell to others at that time.

A. C. Newby, president of the National Automobile Co., confirms the report that Carl Fisher will drive a 60-horsepower six-cylinder National in Florida. Mr. Newby, while hardly expecting victory in the sprint races up to 5 miles, is confident the National had a more than even chance for the 30-mile American car championship and will give a good account of itself against the foreigners in the 100-mile race for the Minneapolis cup. Indianapolis, by the way, is also to give a cup, which will probably be the prize in American championship George Robertson, who piloted the Christie in the Vanderbilt trial, is named as the probable driver of the six-cylinder Premier which was not completed in time for the elimination trials for the American team.

J. Howard Johnson and William F. Hogan, both members of the club and residents of Paris, will represent the Automobile Club of America at the coming international conference of clubs, which will be held in Paris beginning December 11. At this conference the question of the future international road racing is likely to be settled. The chances are that the Vanderbilt cup will be returned to the A. A. for competition in this country.

What will be done about the Bennett cup is harder guessing. Few believe, however, that it will pass into a mere touring trophy. If France be unwilling to promote a race for it, the logical and just procedure would seem to be to offer the contest to the other clubs in the international union in the order of their finish in the last race. France still has a bug for the promotion of a grand prize race next year in which its own cars shall have a 3 to 1 or some other preposterous representation based on a claim of that preponderance in motor car manufacture.

Henry L. Bowden, of Boston, who scored 32% seconds for the mile with his double-engine Mercedes freak at the beach last January, is out of the motor car racing game for good. The two engines of that

car he put in his motor boat. Now he offers for sale his remaining fast machine, Flying Dutchman I, the Mercedes which Basle drove so successfully on the track, This machine was offered as a substitute for the Dinsmore Mercedes in the Vanderbilt cup race, but technicalities prevented its acceptance. It was fitted with new cylinders and a new gear box and generally tuned up. Mr. Bowden thinks it ought to hold its own with the best machines at Ormond, but at the meet he will be missing as a competitor for the first time in 3 years, though he may be a spectator and later participate in the motor boat races at Palm Beach.

Senator Morgan is also considering a still further extension of his southern circuit. At a conference Saturday with H. E. Bemis, manager of the Colonial and Victoria hotels at Nassau, N. H., who will have charge of the Continental hotel at Pablo-Atlantic beach, near Jacksonville, Fla., when it opens on March 15, the suggestion of Mr. Bemis that a 3-day meet be held on this beach April 4-6, was well received by the senator. Of the availability of this beach as a race course much in its favor has been written, embodying Morgan's inspection and Walter Christie's trial of it.

Morgan argues that, following the Cuban carnival, it would make a fitting finale to the winter's racing. It is possible, though, that the meet may not even be the wind-up. E. H. R. Green has written Morgan asking him to get up a tournament for Galveston beach also. The senator is inclined to take the latter proposition to follow the Pablo meet.

The story that Alfred Vanderbilt is having built for the Florida meet a great American racing creation is persistently printed and is backed by one who is usually well informed on racing matters. The car, they say, is to be 250-horsepower.

Francis Richard, a French engineer, who recently placed a new carbureter on the market, is named as the designer. It is said the machine has eight cylinders, with shaft drive, a wheel base of 116 inches, a standard guage, and 10 inches clearance. There will be nothing of the freak about it. The various parts have been manufactured in shops in New York, Jersey City and Newark and the assembling is being done in this city, it is said. Paul Sartori, who will drive it, will take it to Florida early in January for practice and tuning up for the Ormond and Cuban meets.

M. J. Rothschild, of Audinau & Co., who returned from Paris Saturday, says he understood there that Henry Fournier himself was coming over to drive the Itala car in Florida and that the Renault people were to be represented by Sisz. The news here is that Hemery, who has apologized and been let off with a fine, will be reinstated by the French and Italian clubs and come over to drive a Darraeq on the southern circuit.

A. L. Kull, the local representative of the Wayne Automobile Co., tells of the strong play to be made by him for racing honors at Ormond with the Wayne. The campaigners are to go to Florida in a special car furnished by the Seaboard Air Line, which will be sidetracked and used as a home during the meet. A strong bid

for the American championship will be made by a 50-horsepower car. A 40-horsepower racer will be entered for the middleweight events. Deacon Holmes will do the driving. Both of these cars are expected to arrive here next week and will be on exhibition until they are sent to Florida for the beach races.

L. H. Palmer, of the Long Island Automobile Club, will send to Florida the two 60-horsepower Matheson cars owned and entered by him for the American eliminating trials. Wally Owen is to be pilot in all but the amateur events, in which Mr. Palmer will take the wheel.

#### QUAKERS UP AGAINST IT

Philadelphia, Pa., Dec. 4-Unless an amicable adjustment is made before New Year's day, any man who drives an automobile in Philadelphia on that day will be arrested. This is because of a clash of city and state officials over the construction of the new automobile law. The state law requires that on and after New Year's day, 1906, there shall be exhibited on all motor vehicles two state licence tags. No other tags of any kind must be shown. The city ordinance provides that all motor vehicles must display the city's blue and yellow tag. If this tag is not shown, the ordinance directs the arrest of the offender. If it is shown, the state law directs the arrest of the offender. Automobilists, when they saw confusion looming up, went to the state attorney general, who told them that city laws did not count. Then they went to the city solicitor, and he told them that the attorney general was wrong, that no motor vehicles would be allowed in Philadelphia without the city number. The city solicitor did not protest against other numbers, however. He was willing to compromise, to let any car carry the state tag on an equality with the city tag. He did not even object to half a dozen other tags. But he insisted on the yellow and blue label. But the attorney general refuses to compromise.

#### PARIS SHOW PLANS

Paris, Nov. 25-Every indication points to the Paris salon being the finest exhibition of automobiles ever attempted, despite the pronounced success of England's Olympia show, which has just ended. It is true many of the leading French makers displayed their 1906 goods across the channel, but this is not expected to take any of the wind out of the sails of the salon, for the reason that all the new things were not uncovered in England. Anyway, there is only one Paris show and everyone has been saving up for this big event. Even at this early date, with the show not starting until December 8, the management is busily engaged preparing for opening its doors. It is safe to predict that there will be no unfinished exhibits at the salon and right on the dot every maker will be ready at the scheduled time.

A record attendance is looked for. The American delegation will be a strong one, while from England, Germany, Austria and other continental countries will come the automobile enthusiasts, all eager to see the latest thing for 1906. A special automobile bus service will be installed which will run to the Grand Palais.

#### MAY MAKE TIRES, TOO

#### Strong Rumor that Independents Will Go Into the Rubber Game On Their Own Account

Detroit, Mich., Dec. 6-Special telegram -From statements from an indisputable authority, the New York correspondent of MOTOR AGE, now in this city, is able to confirm positively the report that certain members of the American Motor Car Manufacturers' Association are organizing a tire manufacturing company. The promoters of the scheme have gone so far as to secure a factory and contract for machinery, and state that the production of tires will actually begin early in January. Several leading independent makers have already subscribed to the stock and other members will be given the same privilege. The plan of stock distribution is intended to be proportionate to the respective outputs of the subscribers, who are to be restricted to A. M. C. M. A. members. There is no intention of cutting the established prices—the whole idea is a coöperative one, in which the benefits arising are to be derived from the dividends earned and the assuranc of securing an adequate and prompt supply of tires.

The scheme has been under way for some time and was thoroughly discussed and approved at the meeting of the executive committee of the independents held in

New York 10 days ago.

In reference to the report that the licensed association members had in mind the formation of a similar company, George H. Day said last Saturday, in reply to questions put by the writer: "This is as big news to me as it will be to the public. If our members have any such intention I have heard nothing of it."

One of the reasons advanced for the formation of a tire-making concern by the automobile makers is the alleged combination of all the manufacturers of tires with one or two exceptions is so close as not only to name prices but to limit the outputs of the factories as well. The story as told in the east is that the Rubber Goods Manufacturing Co., which includes the Hartford, Dunlop, Morgan & Wright, and G & J concerns, will make 33 per cent of the \$9,000,000 worth of tires which the tire makers will put out; the Diamond, 23 per cent; the Goodrich, 23 per cent; Fiske, 9 per cent; International, 6 per cent, and Goodyear, 6 per cent. This allotment is based on the previous year's business, and a \$10,000 fine is paid if the rule is broken.

It is further alleged that the allotment is made by the month and that if a tire concern is allotted \$45,000 worth of business for a month, and its sales amount to \$60,000, 40 per cent of the \$15,000 excess must be paid to the pool; also that makers are fined for cutting prices in any way, and for giving away tires on any pretext whatever.

It is not anticipated that the formation of the new company will be the means of causing a tire price war, which might be welcomed by the purchasing public. It has been pointed out that this would be a fatal step to any concern making it, for

price-cutting would probably be the cause of cheapening tire construction, whereas today the endeavor of all makers has been and is to improve the quality of the goods they manufacture. Such action would mean the downfall of the American tire business, if not the American automobile business, and would be the means of letting in foreign goods. There is little danger of this from either side, however.

#### DITCHES INSTEAD OF BUMPS

New York, Dec. 5.-Jersey automobilists are somewhat grouchy over the latest proposition advanced by the farmer contingent for the prevention of overspeeding in the wilds of the cranberry and trust state. The project has the bump the bump scheme of Chicago beaten a mile or so. The farmers have an idea that not enough of the speeders have been brought to justice and they have devised a scheme which they think will act both as a deterrent and a punishment. The plan consists of the construction of gutters across the highway, 1 mile apart, so formed that if the machine is running at a high rate of speed, it will be overturned, or, in other words, they want to ditch the car. Assemblyman Scovil has been asked by the Magnolia farmers to get an amendment tacked on the speed law whereby these ditches can be built. Take the White Horse pike for example. By building ditches 1 mile apart, the farmer constables could keep tab on the machines. They would know that a machine must slow down at a certain point, and then the matter of arrest would be easy. And then, it is argued, the ditches would deter the speeders for fear of accidents.

#### PREMIER WINS HILL CLIMB

Los Angeles, Cal., Dec. 1-The hillclimbing contest on the Box Spring canyon grade, near Riverside, Thanksgiving day, for automobiles costing less than \$1,650, drew a small crowd. The course was about 4 miles long, and the surface good. The grade averaged less than 8 per cent and there were no steep places. All the cars made the whole distance on high speed. Bradbeer, with a Premier runabout, won the climb, his time of 6 minutes 43% seconds, being best. The times were as follows: George E. Bradbeer, Premier runabout, 6:43%; W. K. Cowan, Rambler surrey, 7:01; Harris Hanshue, Reo touring ear, 7:08; Ralph C. Hamlin, Franklin runabout, 7:32%; Clarence Smith, Maxwell touring car, 8:02%; W. L. Moreland, Tourist runabout, 8:15; D. Ferguson, four-cylinder Moline, 8:17; W. J. Burt, Reliance, with body on, 8:28%.

#### SPEEDWAY RUMOR AGAIN

New York, Dec. 5—It is now declared that the great Barnegat speedway is assured. The new track will give a 30-mile speeding course and include a 3-mile circuit for track contests. The new speedway will be 3 miles south of Tom's run, 11 miles below Lakewood. A club house and garage will be built and 1,000 members sought. The New Jersey Automobile Speedway Association, of which Jason Waters, of Atlantic City, is president, has been formed to put through the project.

#### BUSINESS IN RUSSIA

#### Automobile Conditions in Czar's Domains Shown in Federal Report—Possible Chance

Washington, D. C., Dec. 4-Reports received by one of the federal departments show natural conditions in Russia are both favorable and unfavorable to the automobile trade. The favorable ones are found in the absence of many hills and the long distances over level stretches. The unfavorable are in the long winters, the intense cold, and the absence of romantic places or scenery to attract tourists. The people and public officials do not favor this method of traveling for they are poor sportsmen. The Russians apparently have little skill in handling complicated machinery, hence the inability to get chauffeurs at reasonable terms. The country people are often bitter enemies of the automobilists, the roads of the Russian empire are often wretched, and the network of ways far from what it might be and what it will have to be before the great Russian empire can count on a successful industrial career.

In the cities it is different. There everything favors the automobile. The slowness with which street railways are built forces many families to keep carriages. These will doubtless turn to automobiles. The only serious obstacle to a rapid development of the automobile trade in the large cities is based on police supervision and regulation. Now that a great change has come over Russia's police and other policies, trade in automobiles may develop unmolested. Each of the different cities, however, has its own way of handling the automobile traffic.

St. Petersburg and Moscow long since recognized the automobile as a necessity, hence their regulations are comparatively liberal. Riga and other cities have been rather severe. In those places certain streets may not be traversed by automobiles. Applications in writing for permission to use an automobile must be made and the car must be subject to expert investigation by the authorities.

Up to date Russia, including Poland, the Caucasus, and Finland, has from 1,200 to 1,500 automobiles, among them many of the lighter kind. Besides these there are about 1,500 motor cycles. Manufacturers interested in discovering the actual conditions governing automobiles and the automobile business in Russia will do well to go over the ground carefully in every large city from St. Petersburg and Moscow down to the smallest place in which sales are to be sought. The farther the empire emerges from a mere agricultural country to a position among the industrial and commercial countries the automobile business is bound to grow. The men who own the mines and forests will want automobiles, for in the long run they will be found far superior to horses, for these latter call for great care and entail enormous expense to their owners.

No one has done much about building motor cars in Russia. A St. Petersburg firm that built motor boats tried its hand at the automobile, while another firm is now doing what it can to manufacture cars in imitation of a well-known American make, also one resembling a well-known German type of car.

The peculiar needs of Russia in regard to automobiles have never been met. The

CALIFORNIA OILED ROAD







MEGARGEL'S ARBIVAL AT LOS ANGELES A SOUTHERN CALIFORNIA ROAD

comparatively great success of the American cars has been attributed to cheapness, abundance of supply, skillful advertising, etc. Simplicity of construction and driving are the prime requisites. Great speed is not required because of the danger from bad roads. Low speeds are wanted because of the steep hills and bad places that require the cars to go slow. The springs must be stronger and longer than they usually are in other countries.

#### IN NO FEAR OF DESERT

# Megargel to Find Out for Himself If the Great American Wastes Can Be Crossed in Car

Los Angeles, Cal., Nov. 29—The Reo Mountaineer, of New York, arrived in town Tuesday noon, after a pleasant trip down from San Francisco, with the exception of some pretty heavy showers on the last 2 days, which made driving a little more difficult than when dry. California is certainly an ideal state for motoring and both Fassett and myself are so pleased with its well-kept oil roads that without doubt we shall invade the state again by motor in the near future, though possibly not together.

An day today I have been planning out a return route across the dreaded sands of New Mexico and Arizona—a course that I have been informed time and time again is impractical, but always by someone who has never tested it himself to find out. I'm going to find out and in another month I will be in a position to tell the automobile fraternity whether or not these sandy

wastes now known as the Great American desert and crossable for automobilists. Candidly, I think they are and that the tales of hardships are much exaggerated.

Just before leaving Frisco I ran across my old friend Whitman, the record holder, still driving the Franklin with which he did it in. A good photograph of the Franklin and the Reo Mountaineer, both cars the battle-scarred champions of transcontinental trips, was taken at Frisco just prior to our departure from that city. Upon arriving at Los Angeles one of the first persons I ran across was Billy Chadeayne, who has just crossed

the continent on his Thomas Auto-bi. He is secretary and treasurer of the Auto-Bi Co., of Buffalo, and it was like being home to run around Los Angeles with him.

When we arrived in Los Angeles our Reo car was so covered with mud that it was hardly recognizable, for California produces some mire after a 2 days' rain, but then this mud, so much talked of by the Californians as doby was not to be compared with the Nebraska product of the same name, nor with Iowa and Illinois gumbo. It was hard wheeling on some of the grades, where the mud was 2 or possibly 3 inches deep, but there was no sinking in up to the side steps, nor occasion to utilize the faithful windlass.

Los Angeles, the greatest city for automobiles for its size in the world, has not been over-estimated and its importance to the industry seems to be recognized by every manufacturer. It is indeed an unheard of machine that is not well represented here. L. T. Shettler, the Reo agent, boasts of some 200 Reos sold here this year that are now in use on the city streets and he is at the present time at work on one of the handsomest garages in the country—an edifice that would shine in New York city were it there.

We heard much about the grades over the mountains on the run from Frisco to Los Angeles. While it is true the road ran over some extremely high mountains, the grade had been made so gradual and the general surface of the road was so good that most of the grades could readily be traveled on the high speed. Our gradometer never registered over 12 per cent on the entire run, while the majority of the grades seldom are over 7 per cent. The turns in the road, however, were decidedly sharp and on some of the hills, automobilists were warned by signs that the state law forbade a speed of more than 4 miles an hour. These notices were signed by the road commissioner.

We ran through several bunches of cowboys struggling with obstinate cattle. In one case the Reo Mountaineer was held up for nearly an hour, awaiting the removal of a huge steer which had been roped and thrown across the road. Immediately upon regaining his feet he would charge first one horseman and then another. Several times he charged the automobile, but was always brought up with a jerk when he reached the end of the several lariats that held him. Finally, with two ropes dragging him and another rope behind, which kept him from charging the ponies ahead, he was hurried up the road, one horseman riding behind spurring him and at the same time twisting his tail.

Since our arrival here we have listened to all kinds of stories about the old Santa Fe trail across New Mexico and Arizona. It seems to be the general opinion that an automobile cannot tour these two states, although I have been told that if we run along the railroad ties we may be able to get through the sand deserts. . Water is said to be anywhere from 5 to 100 miles apart, but with every confidence in the Reo Mountaineer's ability to conquer everything ahead of it we shall push on toward the latter part of the week and expect to make New York city

in time for the two automobile shows. We heard much about the grades over the mountains on the run from Frisco to Los Angeles. While it is true the road ran over some extremely high mountains, the grade had been made so gradual and the general surface of the road was so good that most of the grades could readily be traveled on the high speed. Our gradometer never registered over 12 per cent on the entire run, while the majority of the grades seldom are over 7 per cent. The turns in the road, however, were decidedly sharp and on some of the hills, automobilists were warned by signs that the state law forbade a speed of more than 4 miles an hour. These notices were signed by the road commissioner.

The Spanish names of the towns passed through between San Francisco and Los Angeles in many cases were hard to pronounce. It was also a difficult matter upon numerous occasions to secure information as to the best roads, as Spanish is spoken by fully one-fourth of the people encountered in this region. Among the towns passed through having Spanish names were: San Jose, San Juan, Nativadad, Gonzalez, San Lucas, San Ardo, San Miguel, Pas Robles, Santa Margaritta and San Luis Obispe.—Percy F. Megargel.

#### RUNABOUTS IN A TEST

#### De Dion Makes Best Showing of the Lot at the End of Third Day of Paris Trial

Paris, Nov. 25—Half of the journey of the runabouts competing in the 6-day test was completed last night, with the de Dion the most prominent candidate for

CORMIER IN A DE DION







BARDIN PASSING THROUGH GAILLON RENONCE IN A GREGOIRE

the honors. Thirteen cars started in the trial last Saturday and their work has been closely watched by those who claim there is a great future for the light machines. The tour is over highways near the metropolis and embraces 772½ miles and 125 miles are covered each day. The roads are giving the severest test to the cars in the way of grades, poor going and other difficulties. The cars are rated, in the summing up of points, as to their

ability to keep as close as possible to the 15% miles an hour schedule. A car which falls behind this pace for any reason is penalized 5 points to the kilometer on each stage of the day's trip, but this can be made up by good work later.

On the first day the test was over a 125mile route from a Paris garage, the Darracq, to Mantes, thence to Vernon, to Virage, to Gaillon, then back to Vernon and then back to Mantes. It resulted in victory for the three de Dion-Bouton cars, the Lacoste-Battmann machine and two Gregoire runabouts, which succeeded in getting in without a penalization against them. The cars covered the 125 miles of muddy, rain and snow-soaked road at an average speed of 20 miles an hour. The cars were equipped with 8-horsepower motors and none of them weighed over 1,210 pounds. The three de Dions were one-cylinder machines and were fitted with Dunlop tires and shaft drive, as was also the Lacoste and two Gregoire machines. Out of the thirteen entered only two broke down and returned to the starting place. One was a Hugot, which experienced trouble at the start and went only a few kilometers. The other was a Lacoste, driven by Gallet.

The cars returned to the starting place,

the first ones in 2 hours 37 minutes 4 seconds. They were the three de Dions. The Lacoste-Battmann got in in 3 hours 5 minutes and the two Gregoires in 3 hours 6 minutes and 3 hours 11 minutes respectively, No. 2 leading No. 1 by 5 minutes. Gregoire No. 3 was penalized in the first and second stages and took seventh place. The Vulpes, driven by Barriaux, was penalized 340 points, the Thomas Lacoste 350, the Deemeester 390, and the Gladiator 790. The Gallet Lacoste and the Hugot had quit the competition earlier.

The second day's run produced practically the same results as to finishes as the first, while the third showed

several reversals of form. The de Dion, Lacoste and Gregoire cars still led with no marks against them. The de Dion, driven by Cormier, was first, the Lacoste second and the Gregoire third.

Several of the cars, notably the Vulpes, driven by Barriaux, had reduced the penalizations. Barriaux was in fourth place, with only 65 points against him, as opposed to the 95 which he incurred the first day in the first and second stages of the journey. The tour, which was made each day over the same route, was covered in practically the same time. The successful de Dion car covered the morning stage of the third day, 75 miles, in 3 hours and 15 minutes at an average speed of 22 miles per hour.

At some stages of the journey the little 8-horsepower machine reached an average of 31 miles an hour. Seven of the entrants the third day incurred no penalizations.

At the end of the third day the penalizations were as follows: Cormier, de Dion; Gachet, Lacoste-Battmann; Renonce, Gregoire, 0; Barriaux, Vulpes, 65; Bardin, de Dion, 195; L. de Dion, de Dion, 195; Tavenaux, Gregoire, 240; Thomas, Lacoste-Battmann, 320; Rochay, Lacoste-Battmann, 350; de Bosch, Gregoire, 1,165.

#### ROOM FOR ALL TO SHOW

#### Main Floor of Philadelphia's Exposition Larger than Madison Square or the Coliseum

Philadelphia, Pa., Dec. 4-At a meeting of the Philadelphia Automobile Trade Association last week it was practically deeided to secure the old National export exposition building, in West Philadelphia, for the annual show. An application has been forwarded to the national association for a sanction for March 3 to 10, and there is every reason to believe it will be granted. President A. E. Maltby has appointed a show committee consisting of W. C. Barrows, of the Pennsylvania Electric Vehicle Co.; W. F. Smith, manager of the local Rambler branch house; W. J. Foss, of the Foss-Hughes Motor Car Co., Pierce-Arrow, Cadillac and Baker; John A. Wister, of the Gawthrop & Wister, Yale, and Percy L. Neel, manager of the Quaker City Automobile Co., Pope-Toledo and Franklin.

The show building, which was the main structure of the export exposition, is amply large to comfortably accommodate all applicants for space, and all on the ground floor. Indeed, the main floor area is larger than that of the Madison Square garden in New York or the Coliseum in Chicago, while on the second floor in the front of the building are numerous rooms for offices, etc. The P. A. T. A. has promoted several previous shows, and has experienced the disadvantages of holding such exhibitions in small buildings. Last winter, for instance, the First Regiment armory was selected, and so inadequate was the floor space that not a few big concerns absolutely refused to accept the small sections offered them, and held individual shows in their several establishments. Despite the fact that all the exhibits were cramped, the corridors and company rooms were so blocked with cars, launches, accessories, etc., as to make it quite uncomfortable for visitors. This year it was decided that the advantages of sufficient space far outweighed the disadvantage of location of the export exposition building, which, after all, is no farther from the geographical center of the city than is the Second Regiment armory, in which the 1904 show was held. It is well lighted and heated and well equipped for electrical displays. Besides, exhibits shipped by rail can be run direct to the east doors of the building, which is but a tew feet from the tracks of the Philadelphia, Baltimore & Washington Railroad, a Pennsylvania line. This will be a great convenience to out-of-town exhibitors, as it will enable them to effect quick installation and get away. An idea of the capacity of the building may be had from the statement that it was selected by the local Republican convention committee when McKinley was nominated for the presidency the second time.

At the annual meeting of the Philadelphia Automobile Trade Association, which will be held at the Hotel Hanover tomorrow night, officers will be elected to serve for the ensuing year. At last week's meeting the following nominations were made: For president, A. E. Maltby, of the Winton Motor Carriage Co.; vice president, W. F. Smith, of the Rambler company; secretary and treasurer, Manager Morse, of the Locomobile company; for members of the board of directors, W. F. Smith, Rambler; L. E. Hoffman, Ford; Samuel Cohen, Reo; Percy L. Neel, Pope-Toledo and Franklin.

An idea of the ease of access of the export exposition building to the center of the city is had from the fact that it is directly across the street from Franklin field, the University of Pennsylvania's stadium, where 25,000 football people are frequently handled in jig time by the Rapid Transit Co. and the Pennsylvania Railroad, the latter having a station within 100 yards of the entrance. The actual distance of the show building from the city hall is about 1½ miles.

#### NEW DETROIT CONCERN

Detroit, Mich., Dec. 4-Every effort is being made by the Aerocar Co. to complete its factory in time to turn out a model of its air-cooled car for the New York show. It is less than 30 days since the idea of organizing a company struck Alex Y. Malcomson, treasurer, director and a large stockholder in the Ford Motor Co., and with his customary hustle he proceeded to put his ideas into execution. Contracts for the construction of a factory on the block intersecting the Michigan Central Belt line were let. It is to be over 400 feet in length and when completed will occupy nearly the entire block. Such rapid progress has been made that the power plant is now almost under room and it is expected the plant will be running early in January, the contract calling for the building to be completed in 40 days, M. O. Reeves, vice-president and general manager of the Reeves Pulley Co. and the Reeves Machine Co., of Columbus, Ind., is the inventor and maker of the air-cooled motor which will be used. It is four-cycle and made in two sizes, with the cooling fan in front. Mr. Malcomson, a wholesale and retail coal dealer with establishments in Toledo and Detroit, is at the head of the new company. Walter G. Morley, formerly with the Olds people, is purchasing agent and advertising manager. The mechanical superintendent is E. J. O'Hagen, who comes with over 7 years' experience with the Winton company. C. Pfahler, a graduate of the Technical university of Berlin, is chief draughtsman and H. H. Thorpe, sales agent, occupied a similar position with the Franklin company.

#### COTTA SCORES A POINT

Chicago, Dec. 1-Charles Cotta, of Rockford, Ill., scored a point in the suit brought against him in the United States circuit court by the Four-Wheel Drive Wagon Co., of Milwaukee. The Milwaukee concern filed a bill for specific performance, but Cotta entered a demurrer which was sustained by Judge Kohlsaat. The case came up Wednesday. According to Cotta's version he and H. Theodore Hanson, the promoter of the Milwaukee company, entered into a contract some time ago, but Mr. Hanson recently violated the same. Hence, when the Milwaukee company sued to recover a license from Cotta, it was overruled on the grounds that it had failed to carry out its part of the contract.

#### TO PEER INTO FUTURE.

#### Steel Commission to Visit Europe to Study Experimental Alloys and Plan a Campaign

New York, Dec. 4-The organized campaign instituted by the Association of Licensed Automobile Manufacturers for the mutual benefit of the trade in regard to the establishment of a standard for steel for the mills is now in the hands of Henry Souther, metallurgical engineer in charge of the experimental laboratory of the mechanical branch of the A. L. A., who declares that the investigation to be conducted abroad by the steel companies in the interests of the automobile manufacturers is for the purpose of studying experimental alloys and that they intend getting a line on the future. Mr. Souther declares Americans are going to win by team work, where their European rivals had to find out what they know of steel through individual competition. Speaking of the foreign mission, Mr. Souther said:

"The object of their mission seems to have been a bit misunderstood. They are going abroad to study experimental alloys and not to adopt anything now in use. That is an old story to us. They are not to investigate what is commercial today but what may become commercial in the years to come. French experimenters have compounded certain alloys in an experimental way. Their object is to find out if any are better, and if so, commercially. We Americans have been using for 15 years in projectiles and armor plate chrome nickel steels that have not been excelled in the world. The same alloys have come to the front in automobile manufacture. Our steel makers have learned that nothing is too good for the American manufacturer.

"Our importation of foreign steel is comparatively insignificant-some Jessop steel for tools, some Syrian steel and a little of the French malleable nickel alloys for valves and scientific instruments. Some foreign steel has been used in our automobiles for the reason that European makers have been willing to make small quantities. The Europeans have used good steel in their motor cars. This comes from racing, which has taught them that the best steel must be used. We have had the same advantage, though, first from a proper following of their experience, and, second, from the strenuous demands for strength and durability incident to our bad American roads.

"Into my laboratory have come samples of both foreign and American steel and I have yet to see any foreign steel that has excelled ours of the same grade, and I have yet to see any foreign steel being used commercially that its counterpart has not also been commercially used here. For 2 or 3 years makers of our highest grade cars have been using these finest qualities of steel.

"We are following the lead of the government in its manufacture of projectiles and armor plate, and of the bridge builders and other users of the highest grades of steel in seeking by experiment the best for the purpose. We are standardizing.

We are trying to determine the best steel for each particular part. But this is only tentative and may be changed by the result of development and experiment.

"We know now what is the best from experience, in so far as other industries go by experience. We are adopting standards, so that we can ask for something definite for each part. Some of our members have had the advantage of such specifications. Now the mechanical branch of our association seeks to give this advantage to all. The inspection will be as rigid as that of the government, and will be made at our laboratory in Hartford, where we have counterparts of government testing machines and a force of chemical and physical experts. Members are sending samples of their purchases to the laboratory which are thoroughly tested and put through the various operations of forging, annealing, hardening and tempering to determine their quality and fitness. The best of steel may be ruined by ignorant treatment, so we are getting out a set of standard instructions. see what a member has bought and tell him how to handle it. We determine by our tests what is best for him to buy. Steel may be ruined by overheating, by forging at improper temperatures, and by hardening improperly. Every different grade of steel requires different handling.

"The strength of steel is measured and expressed by pounds per square inch. There are four grades. Low carbon steel will show a tensile strength of 60,000 pounds with an elastic limit of 40,000 pounds. The next grade, high-class carbon, shows 85,000 pounds tensile strength and 55,000 pounds elastic limit. Nickel steel annealed gives 85,000 pounds tensile strength and 60,000 pounds elastic limit. With special treatment its showing will be 100,000 and 70,000, respectively.

"The chrome nickel steels are the highest grades and will test at 90,000 and 65,000 pounds annealed and 250,000 and 150,000 with special heat treatment. The maximum commercial limit that has been reached in chrome nickel steel is 275,000 pounds tensile strength and 183,000 elastic limit. And let me tell you that no automobile engine in use has the power to strip gears made of this grade of steel."

#### MONARCH COMPANY FAILS

Chicago, Dec. 2—J. O. Mason was yesterday appointed as receiver for the Monarch Automobile Co., of Aurora, Ill., by Judge Bethea, of the United States district court, his bond being fixed at \$15,000. The liabilities of the company may reach \$75,000, while the assets are reported to be in the neighborhood of \$20,000. The bankruptey petition alleges that the assets of the company have been in the possession of Sheriff Burke at Aurora since November 29.

Creditors upon whose petition the company was thrown into bankruptey are T. W. Williams, of Indianapolis; the Cartier-Chapman Co., of Ludington, Mich., and the Hartsburg & Hawksley Co., of North Aurora. The claims amount to \$1,570. According to one of the stockholders the action was occasioned by an attachment suit, begun by A. B. Boucher, one of the organizers of the company, for money claimed to be due him.

#### PLANS BIG TIRE TEST

#### English Automobile Clnb Schedules Novel Contest for Spring —Hint of French Scandal

London, Nov. 25-The English automobile club proposes to hold a tire trial early in the spring for the purpose of testing the comparative excellencies of various tires on the market. The distance is tentatively fixed at 4,000 miles, and both solid and pneumatic tires will be divided into four classes-those designed for light cars, i. e., a running weight of not less than 1,500 pounds; those designed for medium cars, i. e., a running weight of about 1 ton; those for touring cars, i. e., a running weight of 3,000 pounds, and those for heavy power cars, with a running weight of about 4,500 pounds. No device will be permitted to be attached to the tire to aid and strengthen it or save it from any road stress, but a separate class will be formed for devices of this character. Not the least interesting feature of this trial is the separate classes opened to test solid rubber tires with minimum earrying weights of 1,500, 3,000, 6,000 and 14,000 pounds, respectively. This latter class is certain to attract a considerable amount of attention. With all their improvements-and they are many-pneumatic tires are still a heavy expense to the small car proprietor, and there are many motorists who would welcome a really good solid tire which would save them from that expense. The weakness of the solid rubber tire is that while at slow speeds and on good surfaces it performs its work efficiently, when the car is properly sprung for tires of that type, but as soon as speed rises to the neighborhood of 20 miles an hour, or roads become rough, the comfort of the passengers and the longevity of the engine and the running gear are sadly impaired. The solid tire motor car is a thing of the future, and until it comes the motor for the man of moderate means will remain unexploited. The commercial vehicle, too, has to be exploited on the solid tire, and the automobile club will do a great service to the industry if it helps to solve that prob-

A scandal is said to have arisen in France in connection with the official returns of one of the official timekeepers of the French automobile club, which has ended in the suspension of the official in question, and which has attracted considerable attention on this side on account of the issues involved. Owing to the impossibility of permitting cars to start off the mark together, the timekeeper in all important automobile contests practically has the decision of such contest in his keeping; and to such an extent has confidence in the probity of these high officials been held that they have been entrusted with their duties almost without supervisioncertainly without that jealous supervision which was exercised when the British automobile club held the Bennett race in Ireland, and checkers were appointed by the various countries engaged. The result of that confidence, and the laxity it engendered, is the charges of improper returns, which have caused little less than consternation amongst the sporting automobilists in France. The wildest rumors are current regarding the issues involved, but as the case is subjudice nothing can be made public. In any event, it is to be hoped that the incident will lead to official and independent supervision of these matters in future. When it is remembered that \$500,000 worth of business has often hinged on the mere winning or losing of a hill-climb or a record-breaking contest in France, it is not, perhaps, to be wondered at that anxious and unscrupulous traders should adopt the surest way to secure the business.

#### ARGUES ON ALCOHOL

New York, Dec. 5-Following the discourse of Whidden Graham before the Automobile Club of America last week, on "Alcohol as a Motor Fuel," there has been considerable discussion in the trade, locally, as to its real value for such purposes. Mr. Graham is an enthusiast on the use of de-naturized alcohol which he believes, with duty removed, will largely take the place of gasoline as a fuel. The arguments in favor of alcohol, he says, are: Its cleanliness, its safety and its freedom from disagreeable odors. called attention to the steady growth in the consumption of gasoline, through it being used so extensively for motor fuel, and hinted that this might ultimately result in a scarcity so marked as to cause an inordinate price. In fact, he said that since the coming of the motor car and boat the price had gradually risen from 6 cents to 20, 25 and in some instances 30 cents a gallon. On the other hand, denaturized alcohol, which is unfit for drinking purposes, were the tax removed, could be sold at a fair profit for 18 or 20 cents a

On the other hand, a number of people who have experimented with alcohol, among them M. Andrè Massanet, general manager of the Panhard branch, declare that there are grave difficulties connected with its use. It is said that the same amount of horsepower cannot be developed with an equal amount of fuel, also that much heavier lubrication is required with alcohol than with gasoline. It is said, besides, that there is a certain amount of water in alcohol which rusts the cylinders and valves; and also that it is impossible to thoroughly strain alcohol so as to avoid dirt. Another argument advanced against the use of alcohol is that it is much more amenable to atmospheric conditions.

#### NEW MOTOR CYCLE MARK

New York, Dec. 2—A 25-mile handicap road race run over the Coney Island boulevard today resulted in new competition road records for motor cycles. F. P. Baker, of the Brooklyn Motor Cycle Club, on a 1¾-horsepower Indian, won, his time being 38 minutes 17½ seconds. Oscar Hedstrom, of Springfield, Mass., on a 3-horsepower double cylinder Indian, a scratch man, covered the course in 32 minutes 24½ seconds, lowering the record of 34 minutes 21 seconds for 25 miles, made by George H. Curtis, in Waltham, Mass., on August 9 last. There were nincteen starters, eleven of whom finished the race.

# Three Columbia Models for 1906 COLUMBIA 24-28-HORSEFOWER CAR

THREE Columbia models comprise the 1906 line of motor cars manufactured by the Electric Vehicle Co., of Hartford, Conn. Two of these are models of the present season that are being carried over, and the third is a new product from bonnet to tail light. Of the retained models mark XLVII, a 40-45 horsepowered car, is offered in much of its 1905 form, such additional features as the new style of lathe made crankshaft, as well as new material in the gear sets and many of the bearings. Besides these are a new carbureter, Mercedes type of hood and other body changes, making the model appear practically in new feathers. Mark XLIV, an 18-horsepower machine with an opposed motor carried crosswise beneath the hood and shaft drive, is among those listed for next season. The new model, a 24-28horsepower car, with accommodation for four passengers and for five in an emergency, has many novelties in Columbia construction. Among these are noted makeand-break low-tension ignition with current from magneto; valves placed side by side in the bottom of ports on the left side of the motor, fly wheel spokes serving as a fan, three-speed sliding gear set, shaft drive and floating type of rear axle. I-section front axles are features of this

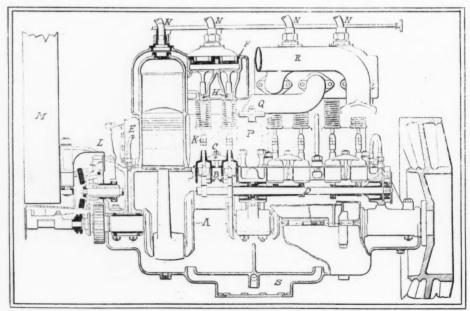
car as well as of the large touring machine. This new machine, mark XLV, has 1 98-inch wheel base, clearance of almost 10 inches, weighs 2,250 pounds and is further featured by the use of semi-elliptic springs in front and rear, and a three-point suspension for both the motor and the gear box. In all models roller bearings are used on the road wheels and in the rear axles, special babbitt carries the crankshaft and phosphor bronze is used in the gear boxes.

Model XLVI exhibits in its motor many features new in Columbia construction, but practically all of which are along the lines of standard practice. The four cylinders are cast in pairs, each pair being an integral casting with valve ports on the left in which are placed side by side the mechanical valves operated by vertical push rods from a single camshaft. The cylinder rating of 24 to 28 horsepower is based on a normal crankshaft speed of 900 revolutions per minute, but the motor has a range of speeds between 150 and 1,800 evolutions. The bore and stroke are 4 and 41/2 inches, respectively. Aluminum is used in both parts of the crank case, the top part of which carries the three crankshaft bearings. The bottom portion with a special oil reservoir S, serves only in

connection with the splash system of oil ing. Three-point suspension of the case is one of the motor features. In this support scheme the side pieces of the frame are offset, to eliminate subframe pieces and the motor is carried directly on a steel cross piece and the main side channels. A new departure is noted in the crankshaft used, which, besides being made from a special carbon and nickel steel, is not drop forged, but made from a slab of cold metal. The general contour of the shaft is first hogged out, after which it is placed on a lathe and machined to a finish and finely ground to give as perfect a balance as it is possible to secure. The maker claims for this shaft freedom from welding such as is often used in forgings, and the complete manufacture of it without the heating process used in forging, in which the quality of the metal is claimed to often be destroyed. The cost of production is several times that of a drop forged shaft. This shaft, as well as the connecting rods, is fitted with babbitted bearings, the babbitt resting on a grid of bronze within the journal. In the camshaft and wrist pins plain bronze is used.

The valve disposition in ports on the left is new with this concern, in that both sets are in the bottom of the ports and operated by a vertical lift instead of the lever motion within the crank case, as used on the present large car and on the last year's models. Valve stems and heads are integral forgings, made from special steel. The former work in the long sleeves H screwed into the bottom of the ports and the push rods work in sleeves B resting in openings in the top of the case and held therein by the yokes C, a construction permitting of quiek removal of the rod and to facilitate valve removal small lugs are cast on the cylinder sides so that a lever can rest thereon for raising the seating of the valve spring while removing the pin that retains the seat in position. On the top of the push rod is the adjusting nut K for varying the valve lift. Cams on the shaft D are arranged in pairs. .

Exceptional simplicity is found in the disposition of the carbureter and in the in take and exhaust piping, the former, Quarrying the carbureter P shown in outline and connecting by a single arm with

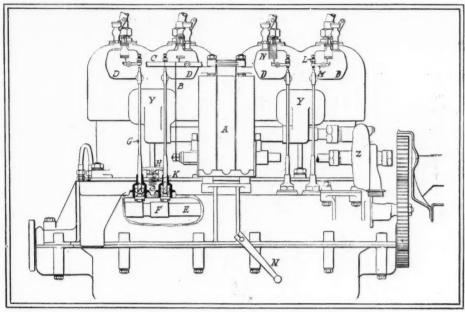


INTAKE SIDE COLUMBIA MARK XLVI, 24-28 HORSEPOWER MOTOR

the pairs of cylinders and the latter R, carried above it is a horizontal tubing with a branch to each exhaust valve. Either set of valves can be removed through the serew caps F in the tops of the valves.

The carbureter is perhaps the most interesting feature of the motor in that it is entirely new and one that has under test increased the motor power considerably. It is of the float-feed aspirating type and has not any springs in its construction. There is not a needle, and what is more peculiar, no place for adjustment. gasoline enters at the right and meets the primary air supply coming through a 1-inch pipe, drawing its supply from between the evlinders, but if desirable in cold weather a jacketed piping can be used for heating the incoming air. For increased speed additional air is supplied through an auxiliary opening at the bottom of the carbureter which consists of a series of small ports opened and closed by a sliding vertical barrel containing corresponding ports, which moves up and down as the motor requires more or less gas. This barrel is made of the required size and weight to offer the proper resistance to the suction of the motor as speed increases so as to rise slowly and open ports and then to drop back easily of its own weight immediately the motor speed decreases. The throttle is of the barrel type placed horizontally in the mixing chamber where the pipe to the motor leaves and it performs a throttling function. It is not in any way connected with the governor on the motor, but is actuated by a foot pedal on the toe board. A hand lever on a fixed quadrant on the steering column fixes and determines the speed which the governor is to maintain, the governor controlling a by-pass valve which it mechanically raises and lowers as the governor balls throw in or out.

Besides the new carbureter is the fitting of a low tension scheme of ignition with current supplied from a gear driven magneto A shown in the ignition side view of the motor. A single wire B conducts the current from the magneto armature to the bus bar C which has connections with the stationary electrode within the combustion chamber. A separate ignition cam shaft E with large cams F serves to

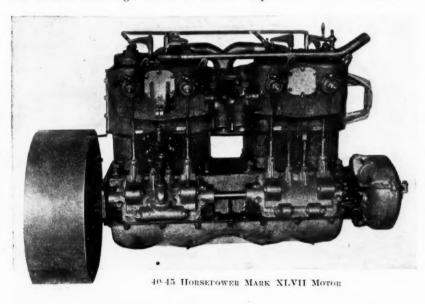


IGNITION SIDE MARK XLVI COLUMBIA MOTOR

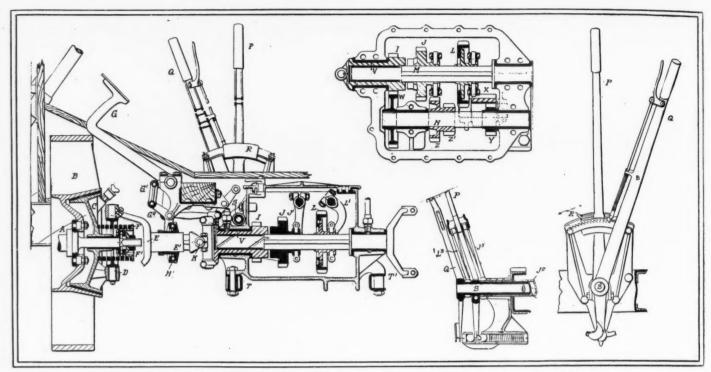
operate the make-and-break mechanism, which consists of a horizontal arm M carried on the igniter plate D. There is on one end of the arm an adjusting screw L against which works the head of the push rod G which is raised from the cam shaft and lowered through the use of coil spring K and a spring arm H, each end of which works in a slot in the push rod, one spring thus sufficing for both rods instead of the usual construction of a separate coil spring surrounding each rod. On the igniter plate a coil spring N serves to hold the movable electrode carried on the arm within the combustion chamber away from the stationary one so that no current flows. When the push rod G goes up the outer end of lever M is raised against the tension of the spring N and the two electrodes within the combustion chamber are brought together so that the circuit is completed and a current starts flowing. As soon as the revolution of the cam F permits of the push rod dropping the spring N separates the electrodes by raising the inner end of lever M. When the two electrodes separate the current tends to bridge the gap between them and leaps in the form of a short and very hot spark. In advancing or retarding the spark the cam shaft E is moved to the front or rear by the lever N connected to it through yoke and collar and as the cam F is not of the same size throughout, the timing of the spark is advanced or retarded.

Integral water jackets are used in cooling the cylinders, the jacket for each pair receiving its supply from the pump Z, gear-driven, and carried on the front of the motor through the openings Y. From the jackets water passes to the top of the radiator M through openings N in each cylinder head.

Lubrication is by continued oil circulation sustained by a rotary oil pump geardriven off the cam shaft. This pump with a capacity of 15 pounds pressure, forces oil from a reservoir S in the base of the crank case through a conduit which leads to the main crankshaft bearings, the camshaft bearings and the valve push rod guides. The oil in falling from these bearings into the crankcase is maintained at a fixed level by dams around the overflow pipes and in flooding these dams it overflows and returns to the reservoir S. Connecting rods are splash-lubricated by scoops and







CLUTCH, SIDE AND TOP SECTIONS OF GEAR BOX AND LEVER CONSTRUCTION IN COLUMBIA MARK XLVI CAR

the connecting rods work in diaphragms across the lower ends of the cylinders, preventing an excess of oil in them with the danger of fouling the make-and-break mechanism. An auxilliary oil tank with a capacity for 400 miles is hung to the frame of the ear from which oil is piped to the crank case reservoir, from which it is distributed to the motor as before.

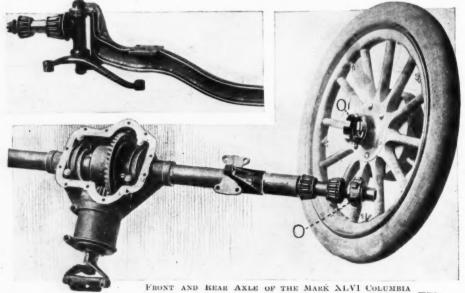
Columbia mark XLVI consists of four units: the motor one, gear set two, telescopic propeller shaft three and rear axle drive four, with cardan joints uniting the four units so that poor alignment between the motor and the rear axle is readily taken up. The clutch constituting the first part of the transmitting system is a small, external leather-faced cone one, with the male part C fitting within the fly wheel B, made with fan-like blades for drawing hot gases off from around the motor. Using the fly wheel as a fan reduces considerably the clutch diameter,

which is compensated for by the extra wide friction faces of the two parts. Friction is further assisted by using small brass shoes in the leather facing, the shoes causing an easy and gradual engagement. A bearing for the male part C is furnished in the continuation of the crankshaft A, a suitable bushing being inserted. Rigid with the male part is the ring part D which at its periphery carries the coneshaped covering E with its sleeve E1 which is a sliding fit over the short shaft K in turn united by universal joint with the hollow gear shaft V. This shaft has its bearing in the front of the gear case, and is made integral with the gear I, its rear end forming a bearing for the main shaft M of the gear set. Within the clutch easing E is the clutch spring resting at the rear on the cup-shaped piece F bearing against a ball thrust bearing held in place by the cap F1 screwed on to the end of the crankshaft A and at the front

bearing directly on the part C of the clutch. The spring normally holds the clutch engaged and for disengagement the pedal G on being depressed works through the link connection G1 to the bell crank G2, the lower arm of the latter working with the clutch yoke H, which, with its race of end thrust balls, carries the sleeve E1 to the rear, withdrawing the male portion C.

Three-point suspension can be considered a novelty with the Columbia concern in the design of this model. In carrying the gear box on this system one support T at the center of the front end carries that part on a cross piece of the main frame and on a similar cross piece the rear end takes two supports, one at either corner, one of these being shown at T1. The case has the main shaft M and countershaft N in the same horizontal plane and it is divided in line with the bearings. In both shafts a special chromenickel steel is used, the elastic limit of which is placed by the maker at 135,000 pounds to the square inch and the tensile strength of which is 225,000 pounds to the square inch. Both shafts revolve on long phosphor bronze bearings supplied with oil from four individual oil cups, the cups carried at the right side of the car beneath the frame side piece.

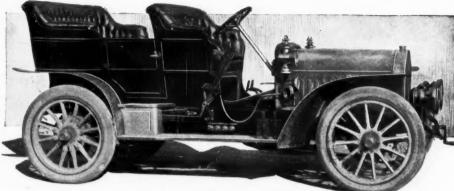
Three speeds and one reverse are given, in the obtaining of which two sliding units are used. Both of these, J and L, are carried on the squared main shaft M, the former on the front end of the shaft, when moved to the front, locks with gear I for direct drive and when meshed with gear Z gives intermediate speed. For slow speed the shifting unit L is engaged with gear Z1 on the countershaft and in reversing this unit is moved back, engaging with the idler X, made with extra wide face, double the width of the other gears within the case, so that it can mesh with gear L on the main shaft and Y on the countershaft at the same time. When driving on direct



speed the countershaft revolves, the large gear W being in constant mesh with the small gear I on the sleeve V.

The movement of the sliding units J and L is through a single side lever P working in a double slotted quadrant R. lever is pivoted on the shaft S which extends across the main frame with a hearing in each side piece and to it is keyed the emergency brake lever Q. In the cross section illustration it can be seen that the change speed lever P works between two short arms J3 and L3, each with a short lug at its upper end. These lugs are made to fit a slot in the lever so that moving the lever to the right or left locks it with them. The arms are fitted with a flat spring to hold them away from the lever P. The arm L3 is carried on a sleeve surrounding the brake lever rod S. Surrounding this sleeve is another sleeve J2 to which is connected the arm, J3. The inner end of the first sleeve conneets by rods with the curved arm L1 within the gear box, which is yoked to the shifting unit L. In a similar manner the sleeve J2 is connected through the arm J1 with the sliding gear J. In moving the arms L3 and J3 the lever P is moved to the right or left when it locks with the arms. When moved to the front or rear it carries the arms with it. On the bottom of the lever is a depending arm with sector resting between a pair of balls one held against the sector by a coil spring. When the lever P is opposite the gate in the quadrant this spring will tend to hold it in the gate in a neutral position, so that the lever is always ready for any of the four speeds.

The telescope shaft coupling the gear box with the live rear axle is of typical construction throughout and has the pinion on its rear end contained in a housing, forming a part of that for the spur gear differential. Accessibility to the gears is made possible by splitting the housing horizontally above the bearings, the top part

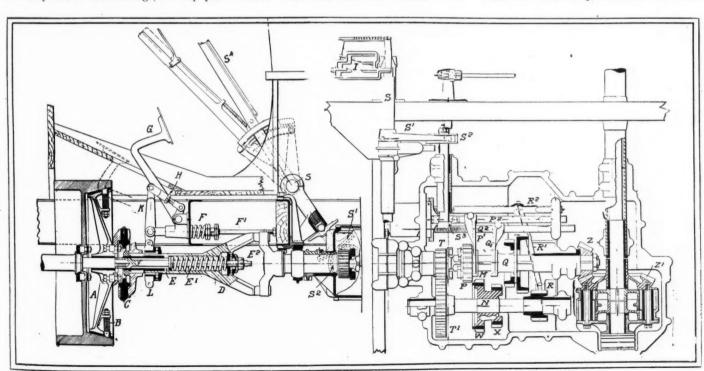


COLUMBIA MODEL XVLII IN 1906 LINES

being above the axle bearings. The axle drive shafts are carried within a tubular housing, which carries all of the weight of the car, the drive shafts only being subjected to driving strain. The housing sleeves extend through the hubs of the road wheels and carry a couple of cages of roller bearings on which the wheel revolves. On the outer end of each drive shaft is a heavy cap O with large teeth or dogs which mesh with similar dogs on the outer face O1 of the steel hub of the road wheel, thereby locking the wheel with the shaft. A suitable hub cap covers the interlocking teeth on the hub and shaft and holds the wheel in position. Within all parts of this axle except where end thrust is reckoned with, Timken roller bearings are used, the end thrust bearing being of the Hess-Bright ball type.

Hubs of the rear wheels carry the regular and emergency brakes, the former being external bands tightened on the cast steel drums through a pedal and the later of the expanding type work within the drums and take the form of cast steel shoes forced against the interior of the drum in the usual manner and connected with the lever at the driver's right by rocker shaft and steel wire cables. The

brake drums are bolted to the wheel hubs. Mark XLVII, the present large touring car, retains its present style of motor which consists of two pairs of 5 by 5-inch cylinders, giving its rating at a crankshaft speed of 800 revolutions with a flexibility ranging between 150 and 1,500 revolution. Valve actuation is the same as this year, the inlets being in the top of the ports and opened by vertical push rods with arms resting on the tops of the valve stems. Within the crankcase is a eam lever which pulls the push rod down, but in the case of the exhausts a similar lever serves to raise the push rod, thus opening the valves which are located in the bottom of the valve ports. breech-lock method of retaining the spark plugs is still in vogue and the commutator is driven off the camshaft. Jump spark ignition, with current from storage cells, conducted through a four-vibrator coil carried on the dash, is retained. The body lines are slightly altered by a hollow metal dash, a Mercedes bonnet and the placing of the emergency brake lever further back and beside the change speed lever. Both brakes are still interconnected with the clutch. The rear body lines are much the same except that the seat arms

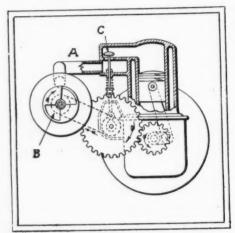


CLUTCH AND GEAR BOX ASSEMBLY IN 40-45 HORSEPOWER COLUMBIA CAR

are lower. The diameter of the road wheels is increased to 36 inches.

The transmission of power from the motor fly wheel to the rear hubs in the big Columbia car remains practically the same as at present with the exception of the placing of a universal joint between the clutch and gear box, to take up any differences of alignment between the crank and gear shafts and in the increasing of the bearings within the case. Contrary to the practice followed by many, the maker has not adopted ball bearings within the case, long plain journals with a bronze lining A four-speed and reverse being used. gear set with double chain drive to the road wheels, remains.

Two springs are used in engaging the cone clutch used in this model. Unlike



WEISS MUFFLER, VALVE IN END

in the new car, the clutch diameter is practically the same as that of the fly wheel. For ease in engaging, the male portion A carries the brass shoes within the leather lining, each being forced outward by the springs shown at B. The double spring scheme consists of the main spring E1 within the sleeve-like housing D which has spreading arms to connect with a short shaft to the gear case. The spring is retained on a small shaft E2 by a ball thrust against which it bears and in the front it rests on a sleeve bearing upon the collar E on the sleeve D. The second spring F, a much smaller one, is carried on the rod F1 fastened at the back end to a cross piece of the frame and in front pivoted to the arm K connected with the clutch pedal through the adjustable arm H and the pedal G. A downward movement of the pedal carries the arm H to the front and with it the top part of the arm K, the bottom portion traveling slightly to the rear. With the first pressure on the pedal the spring F is compressed and then the forward end of the rod F1 acts as a pivot, a further movement of the pedal carrying the thrust collar L to the rear and withdrawing the clutch part A. While this is the action of the spring in engaging, its important part is played when the clutch is engaging, it then serving to resist the quick forward movement of the main spring and so correspondingly retards engagement with a similar lack of jerk being transmitted to the gear set and road

Within the gear box new chrome-nickel

gears of wide face have been fitted. The tensile and elastic strength of these gears are the same as in the smaller model. In getting the five speeds-four ahead and a reverse-three sliding units, all carried on the squared main shaft M are used. Each sliding unit has not to pass through gears in going from one speed to another, making it possible to drop from direct drive to reverse or into any of the forward speeds. One lever gives the five speeds, working in a three-slot quadrant I, the middle slot being for first and second speeds ahead, the inside one for third speed and direct drive and the outside slot for reversing. Should direct drive be needed the unit P is moved to the front, locking with the gear T on the shaft from the clutch, the gear being moved through the arm Pl, in turn attached at its outer end to the shafting rod P2. In direct drive the rod P2 must be carried to the front which is done by having the front end on top made as a toothed rack in which meshes a pinion S3 carried on a cross arm with a bearing in the side of the gear box. This carries on its outer end the flanged sector S2. With this sector meshes a rack S1 on the bottom of the change speed lever S4. This lever has a long bearing in the sleeve S carried crosswise on the main frame pieces, so that if the lever is placed in the central slot of the quadrant the sleeve S is carried with it, as is the sector S2 and the pinion S3, so that the pinion T slides into the rack on shaft P2 and as it is rotated carries the rod to the front or rear, thus shifting the gear P.

A backward movement of the shifting rod P2 meshes the gear P with gear W on the countershaft for third speed ahead. For second and slow speeds the unit Q with its two gears is moved to the front and rear, respectively, its front and rear gear meshing with corresponding gears on the countershaft. In reversing the idler R on a shaft in the bottom of the case is moved by the arm R1 connected with the shifting rod R2. Both shifting rods R2 and Q2 are made with racks on their forward ends and with these can be meshed the pinion T the same as on direct drive. A locking device is attached which prevents more than one of the shifting rods P2 R2 and Q2 being moved at the same time. In the rear part of the gear box is the spur gear differential carried on the jackshaft with its sprockets for side chain drive. The bevel pinion Z on the main shaft as well as the large bevel Z1 on the differential are protected from end thrust by races of ball bearings.

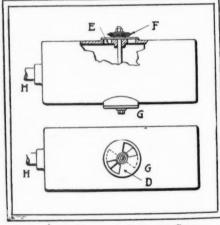
In the running gear nickel axles are used in front as rear, both being of I-section, and having integral spring seatings. Full elliptic springs carry the rear of the frame, as at present, and long semi-elliptics support the front. Four-inch tires encircle the front wheels and 4½-inch sizes are used on the driving wheels.

#### WEISS MUFFLER

A novelty in muffler construction has been brought out by L. T. Weiss, of Brooklyn, N. Y., valves in it being opened and closed regularly with relation to the exhaust valve in the motor, the valves in the muffler being operated directly from the camshaft. The muffler is a large cylindrical chamber without baffle plates, perfo-

rated tubes, metal partitions or other regular muffler features inside, there being nothing but one large chamber into which the exhaust gases pass direct from the motor through very large exhaust piping. The muffler capacity is generally five times that of the cylinder capacity of the motor. In attaching it to a vertical motor the connections are as shown in the combined motor and muffler illustration, where the exhaust pipe A enters the top of the muffler near the center, the muffler being carried lengthwise. In the muffler end is the rotary valve belt driven from the camshaft, through which the gases pass to the atmosphere. The valve is so timed that it is closed when the exhaust valve from the cylinder opens, thus allowing the exhausted gases to expand within the chamber. As soon as the motor exhaust valve closes the valve B out of the muffler is opened and the expanded gases are given free passage out. The inventor in this arrangement claims to do away with back pressure by having a chamber five times the cylinder capacity for the hot gases to expand and cool in, there not being any dividing plates within the chamber to hinder the expansion. Silence is obtained by confining the gases in this manner and then, when partly cooled, letting them gradually exit. The exit valve takes the form of a double ventilator in the center of the muffler end, there being a pair of fanlike openings and revolving fan-like metal blades for covering the openings and for revolving. The former is a small wheel on the fan hub, connected by round belt with the camshaft.

Where the car design does not permit



WEISS MUFFLER, VALVE IN SIDE

of this arrangement the exhaust from the motor can be made to enter at either of the muffler ends and the exit valve placed in the center of the sides at D and G with the motor in either case connected at H. In this design the valve openings can be seen at E and the wheel for driving from the camshaft shown at F, which can be either on the top or lower side of the chamber. The pipings from the motor are generally twice the diameter of the exhaust valve, so that as free movement as can be is given the heated gases.

The manufacturer has had this muffler under constant test on different makes of cars for several months and claims that back pressure is not found, that the gases quickly cool and expand in the chamber and that the valve action is reliable.



#### A SMACKING QUESTION

Place Unknown—Editor Motor Age—I own an automobile; heretofore I kept a horse and buggy. The old custom was that when a man took a young woman out driving he could collect a kiss as toll for each bridge he crossed. Does this custom hold with the automobile? A man used to get one kiss per bridge on a one-horse and-buggy proposition. Can he now collect as many kisses for a bridge as his machine has horsepower?—Anxious Reader.

An answer to this question required such delicate handling that it was deemd best on the part of the editorial department to submit the case to the young women employed by MOTOR AGE and to abide by their decision. When the letter was read and a vote taken there was no indecision about the matter; it was a unanimous vote in the affirmative, with the suggestion added that it was not only permissible but highly desirable that the operator of the automobile should secure all the smacks he possibly could. Possibly the young women's decision was based upon a little Minnesota episode a year ago. In this case a motorist drove his machine into a livery barn for the night. The liveryman admired the machine and the owner of the automobile, being a well satisfied person, boosted the car's power from 12 to 24 horsepower. The liveryman said nothing, but continued his laudations of the motor car. In the morning, when the automobilist asked for his bill, he was confronted with a \$12 charge, the liveryman explaining that he always charged 50 cents for keeping one horse and as this was a 24-horsepower car the bill would be \$12.

#### ROLLERS ON PUSH RODS

Fort Wayne, Ind.—Editor Motor Age—The majority of the ears on which I have had to do a little repairing are fitted with small rollers on the bottom of the push rods which operate the mechanical valves. The cams strike upon these rollers when working the valves. Some motors, however, have push rods with curved shoes on the bottom instead of the rollers, the degree of the curve being found by experiment. Which of the two constructions is better and what are the advantages and disadvantages? In either case why is the camshaft not placed directly beneath the push rod?—A.T.

The roller type is now considered preferable, as in this construction the friction is reduced to a minimum. The roller on its down stroke leaves the high point of the cam, allowing the valve to seat at a higher rate of speed than when opening, thus permitting the valve to seat immediately after the inspiration stroke of the piston. The curved shoe

undoubtedly permits a more gradual descent of the valve, although the closing of the valve can be done in the same time as in the roller type. There are various reasons why the camshaft is not placed directly under the valve stem; for instance, the space required for the camshaft bearings may be farther from the center of the cylinder than the inlet valves, which are placed as near the center of the cylinder as possible to obtain the full force of the explosion over the piston.

#### FREEZING OF GENERATORS

West Salem, Wis.—Editor MOTOR AGE
—Will you tell me of some way to prevent the water from freezing in the carbide generator? Is there anything that
can be placed in the water to prevent its
freezing without affecting the carbide?—
W. L. MCELDOWNEY.

Place the carbide generator as near the exhaust pipe as possible. If not convenient to do this, run a few coils of pipe from the exhaust around the generator; or put the generator into another specially constructed can, leaving a small space all around, and introduce into this the exhaust, with an outlet on the opposite side. In some cases the heat generated by the gas is sufficient to keep the water from freezing. Experiments conducted by putting chemicals into the water have wrought havoc with the soldering in the generators.

#### INDEPENDENT VIBRATORS

Audubon, Ia. — Editor Motor Age—Will you inform me through the Readers' Clearing House where I can obtain an independent vibrator to use on a plain jump spark coil? Also give small drawing showing how to wire it correctly.—C. L. Hoover.

MOTOR AGE respectfully refers the writer to any of the well known coil-making concerns, most of which are carrying advertisements in the columns of the MOTOR AGE.

#### EFFECTS OF CALCIUM CHLORIDE

Chicago, Ill.-Editor Motor Age-We call your attention to the article which appeared in the November issue of the Autocar on non-freezing solution, which is about as far from the facts as any article can possibly be. The writer is correct in stating that substances dissolved in water lower the freezing point. He also implies that calcium chloride when reduced by a chemical works from a liquid to a solid and placed on sale to motor companies is a very expensive proposition, which is not the case, either here or in England, as material can be bought in 700 or 800pound drums at 1 cent per pound. He states that calcium chloride gives off hydroflouric acid-which is muriatic acid

-which is absolutely incorrect. He also speaks about the solution becoming concentrated through dryness, chemically an impossibility except where the solution is boiled, as no ordinary evaporation will allow the solution to become weaker than 24 degrees Baume, which contains about 4 pounds of calcium chloride to a gallon and is a thin solution. He states that calcium chloride will crystalize out when the solution becomes concentrated, an absolute misstatement. There is no way of crystalizing the chloride until the water is driven off by heat. It seems he recommends glycerine, which is a product containing a large amount of sulphuric acid. The inside of a can which has contained glycerine for 30 or 60 days will show that the sulphuric acid has eaten through the tin plating and has caused corrosion. That is one reason why all the railroads have thrown it out of use for switches .- JAMES H. RHODES & CO.

#### GASOLINE AND OIL

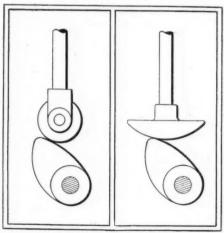
Brooklyn, Ia.—Editor Motor Age—What test of gasoline is best for cold weather, 68, 74 or 88? Would it do to mix the 68 and 88, or is it better to use either one or the other separately? Would it be any help to cover the pipes that lead from the carbureter to the cylinders with asbestos to keep the cold air away and would it help to cover the carbureter? If calcium chloride is used to prevent freezing, will it leave any deposit on the cylinders or pipes of the radiator if it is filtered properly? Which is the best grease to use in the transmission—hard oil, graphite or heavy cylinder oil?—Reader.

A 76 test is considered good gasoline to use for all ordinary automobile purposes. It would be advantageous to have induction pipes covered in cold weather to prevent them from freezing. Practically no deposit will be left in cylinders or pipes if calcium chloride is filtered before using. At 5 or 6 degrees below zero glycerine becomes a pasty mass, but soon liquifies after the motor has been running a few minutes. A heavy on is preferable in the transmission, as the splashing of oil insures a good lubrication to all moving parts.

#### HOT AND COLD RIVETING

Nashville, Tenn.—Editor Motor Age—Which is better, bot or cold riveting in the frame work of a chassis, and what are the merits advanced for each method?—G. D.

This topic was covered in Motor Age in the issues of October 26 and November 9.



PUSH ROD END CONSTRUCTION



of cylinders, water governor for carbureter throttle, compensating ball bearings in the road wheels and end bearing of the jackshaft, fourspeed ahead sliding gear transmission, with a double set of bevels driv-ing to the differential on the jackshaft in the rear of the gear box, and automatic carbureter are the leading features in the 40 to 50-horsepower Chadwick touring car for 1906. Its maker, the Fairmount Engineering Works, of Philadelphia, retains such present features as double chain drive, cone clutch and tubular suspension of the gear box. The body and running year follow general lines in construction. Pressed steel of channel section is used throughout in the frame parts and simplicity is aimed at in dispensing with a subframe, the motor lugs being made sufficiently long to rest direct on the frame pieces. Cross members carry the gear box and other parts. Extremely long halfelliptic springs carry the body front and rear and with both sets are long Mercedeslike curved spring hangers. A further touch of the Daimler lines is in the radi-A further ator and hood. Thirty-four-inch wheels carrying 41/2-inch tires are fitted front and rear, the thread is standard, the wheel base 108 inches and the weight approxi-

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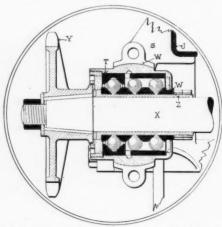
CARBURETER WITH ITS RING FLOAT

mately 2,700 pounds, with body equipment.

Easy body lines rule throughout; the individual front seats have fairly high backs with a rearward curve at the top; the side entrances are wide and surrounded with scroll-like design and the back of the car has a forward curve from the frame up to the bottom of the seat, when it becomes a medium rear curve ending at the top of the seat. Broad fenders, running board and straight dash are other points

in the body work.

From 40 to 50 horsepower is generated by the Chadwick motor, which is of the vertical four-cylinder variety, with cylinders cast in pairs, each pair being water jacketed by a single copper jacket. The bore and stroke are 5 and 6 inches respectively. The pairs of cylinders B are made with a common base by which they are secured to the crank case. They also have a common flange C over which fits the bottom of the water jacket. The jacket takes the form of a copper water pail with straight sides. When attached it is inverted with the top resting on the flange C. To retain it in position a tightfitting ring is slipped over the jacket and pressed over that part of the jacket enclosing the flange, thus producing a tight union. The cylinder casting is made with the inlet and exhaust valve ports of sufficient length to extend practically to the jacket walls. Similar construction is used in the valve caps E and F, through which the inlets and exhausts can be taken out. The jacket for each pair of cylinders is pressed out of a sheet of copper, being without seams or joints of any kind and

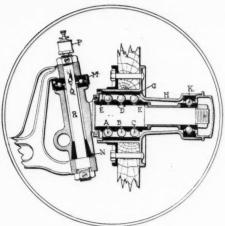


COMPENSATING BALL BEARINGS OF JACKSHAFT

has openings corresponding with valve and valve cap openings in the cylinder cast-Glands are used at the various ports in the jacket to make water-tight joints. None of the camshaft gears on the front end of the motor is enclosed within the crank case as in the smaller model, but they are made with wide faces to reduce noise. The valves are carried in separate ports at the opposite sides, the inlets at the right and exhausts opposite the push rod sleeves D are made integral with the cylinder castings. Both sets of valves are interchangeable, having a diameter of 21/8 inches and with either set the lift is 15/16 inch. Nickel is used in the exhausts and nickel steel in the intakes. The carbureter M is carried close to the motor and connects through the pipings N with the valves. On the front end is the water pump G supported on a bracket H. The water circuit is standard, the pump taking its supply from the bottom of the radiator and delivering it by way of the pipings K to the bottom of the water jackets. The exit from them is through the top to the top of the radiator. Ignition is by jump spark, with current from storage or dry cells distributed through a commutator L carried on a vertical shaft at the rear of the motor and driven by bevels off the camshaft. It is made from bronze with contact points of pure copper, fiber and mica serving in the insulation. A feature of it is that the stationary contacts are held toward the revolving one by coil springs and that any one of them can be withdrawn from the outside of the case in succession for testing cylinders.

The Chadwick carbureter is compact in every detail, is readily accessible and is constructed along the lines of modern tendencies with a ring float C within the chamber D and a spraying nozzle J in the center of the float, so that the level of gasoline in the nozzle is the same at all times as its level in the float chamber. The mixing chamber X is a vertical cylindrical space surrounded by the barrel throttle K which has a port shown at F for admitting mixture through the passage B to the cylinders. It is manipulated through the short yoke lever M with the water governor on the motor. A feature of the carbureter is that at the bottom of the mixing chamber is an automatic shutter E which works in connection with the throttle so that when the throttle is turned cutting off part of the supply to the cylinders this shutter is moved. The air passage around the spraying nozzle is limited, so that the suction past the nozzle is slight. When the throttle is wide open the shutter E is also wide open, thus giving free passage to the incoming air through the passage A. When it passes the nozzle in this way it lessens the suction at the nozzle, not drawing so much gasoline out as it would if the opening was at the same size for all motor speeds. This device has the claim advanced for it by its maker that with fast motor speeds too rich mixtures are not obtained and on slow speeds a sufficient quantity of gasoline is sucked in to give a powerful stroke. The spraying nozzle J is adjustable and its top or spraying part is made so that the gasoline has to exit through openings in which the fuel passes a short sharp angle in the passage, serving to break it up and facilitate its mixing with the air. The flow through the nozzle is controlled from the top through the gasoline adjusting screw L carrying an arm for adjusting it and at its lower end resting in the head of the nozzle so that raising or lowering the screw increases or decreases the fuel flow. Gasoline enters from the fuel tank by way of the passage P, its free flow being under the control of the short pencillike valve H, with the pointed part uppermost and fitting in the conical part of the entrance pipe. The valve normally remains open because of its own weight but is closed through the medium of a lifter rod G carried horizontally in the top of the float chamber and which when raised by the float bears upward on the valve H. A stop cock N connects by separate passage with the entrance to the spraying nozzle and through it the fuel in the nozzle and float chamber can be drained off.

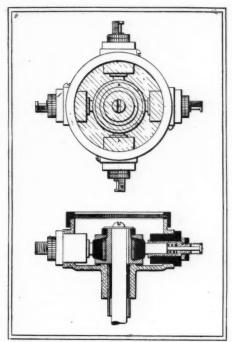
Chadwick ball bearings in the road wheels and the ends of the jackshaft are illustrated. Their peculiarity lies in the designing of the cones to accomplish a compensating action so that when the balls are slightly worn in one race the cones automatically adjust themselves. In the wheel bearings three balls races A, B and C are used and on the axle are four loosely mounted cones, two with double



BALL BEARINGS IN ROAD WHEELS

cone faces as shown at D and separating the race of balls B from the races A and C, and two end cones E with a single face for retaining the races A and C in position. All of these cones, being loose on the shaft, it is apparent that should balls in the race A become worn, the balls in the races B and C will force the cones D in the direction of the race A. pressure on all three races is equalized as it was before the wearing took place. A steel ring or sleeve G rests within the hub H and against it all three sets of balls bear, it forming, in fact, the bearing surface of the hub. In the outer end of the hub is a single ball race K, the balls of the four-point support variety with adjustment within the hub cap. Bearings in the steering knuckle are balls on top and a plain conical bushing N at the base. The balls M in the top are protected in a dust-proof case and work between irregular shaped cups, with two bearing points in each. On the top of the knuckle axle R is an individual oiler P from which lubricant is conducted down a bore in the top part of the axle as far as the opening Q where the oil flows to the balls forming the bearing.

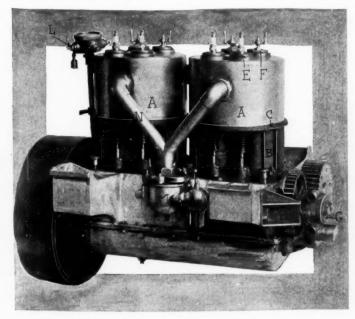
The bearings on the ends of the jackshaft, shown in another illustration, differ slightly in that the outer race of balls is



TOP AND SIDE SECTIONS OF COMMUTATOR

retained by a cup ring T, whereas the other two races bear directly on a steel sleeve within the hub. The compensating feature is used but the cones instead of resting directly on the jackshaft X, are loose on a bushing Z surrounding the shaft, the bushing screwing into the shaft housing at the inside and having a collar at its outer end for retaining the outer bearing cone in position. The sprocket Y is fitted to the shaft, with a taper and at J is shown a section of the side piece of the frame to which is attached the bracket S carrying the shaft. It can be noted that this bracket has a ball joint bearing shown at W with the case carrying the shaft bearings so that torsions of the frame do not result in misalignment of the shaft.

The water governor acting directly on the carbureter throttle is of the type used for some time on many foreign machines and has been in use for some time on Chadwick machines. It works on the

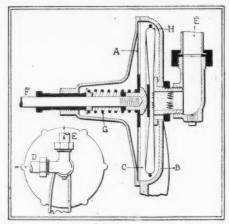


C A B

INLET SIDE SHOWING CARBURETER

CHADWICK MOTOR

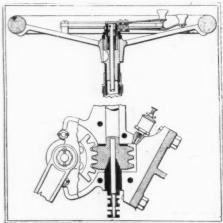
EXHAUST SIDE AND COMMUTATOR



CHADWICK WATER GOVERNOR

principle that pressure in the water system is in direct proportion to the speed of the motor: With fast speed pressure is increased in one and all parts of the system; with a dropping of the speed the pressure falls. In putting this into effect the maker places a pump-like casing B in the water system, having water enter the front of it through the opening D and exit by way of E. The feature part within the casing is the light copper diaphragm A equal in diameter to that of the casing. It is so located that water pressure can only bear upon one side of it. A coil spring G on the opposite side, and surrounding the rod F, to which the dia-phragm is attached, tends to resist the water pressure. This rod F connects with the carbureter throttle. At normal speeds the tension of the spring and that of the water pressure are so adjusted that the throttle allows sufficient mixtures to pass to the inlet valves but with the motor speeding the water pressure exceeds the tension of the spring and the throttle rod is moved in the direction of the spring, thus closing the throttle. On the water side of the diaphragm is a scroll spring H with a center block bearing direct on the end of the rod F and serving to keep the diaphragm in its proper position so that water cannot get on the same side of it as the coil spring.

Flexible connection between the motor and the sliding gear set is by a cone clutch 17 inches in diameter with the cone constructed from aluminum and fitted with light springs placed under the forward edge of the clutch pedal to prevent a too



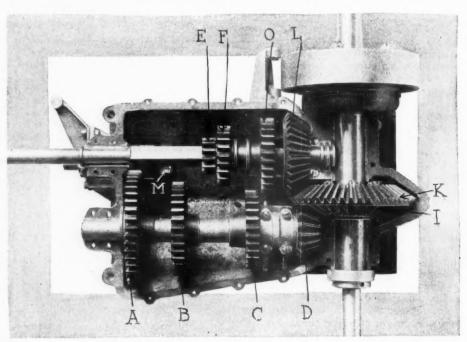
CHADWICK STEERING COLUMN

rapid and jarring engagement. The female portion, also of aluminum, is fastened to a rocking center made from hardened steel which allows of the clutch rocking in any direction without straining the arms. All of the working parts are made from hardened steel and engagement is by yoke, with special ball bearings for taking strain off the crankshaft.

In the gear box four forward speeds and a reverse are gained, the high speed being direct. As in most side chain driven machines, the differential gearing is housed in the rear part of the case. A novelty is met with in the bevels attached to the differential. There are two, one K facing the right and meshing with a bevel pinion L on the rear end of the main shaft of the case and another backing it and constantly in mesh with a pinion D on the end of the countershaft. In this construction on direct drive the

into mesh with gear A, the reverse pinion M being at the same time slid into the barrel which receives it, the arrangement of throwing it out being contained in the shifting rod so that there is no possibility of getting two pairs of gear in mesh at once. With gears E and A meshed the drive is through the bevels D and I to the jackshaft. In second speed gear F is meshed with B and the drive is through the bevels D and I and in third speed the gear O is meshed with C when the power is transmitted through the same set of bevels, the bevels L and K being only used in direct drive but remaining in mesh and revolving on all other speeds.

In changing speeds only one lever is required. It operates through a notched quadrant for all the forward speed, but to get the reverse the lever is brought to the normal position and then rocked in-



CHADWICK FOUR-SPEED GEAR SET WITH DOUBLE DIFFERENTIAL BEVELS

power is brought direct from the clutchshaft, which is continued through the gear box and carries the sliding unit composed of gears E and F and also the sliding gear O. This gear O has on its rear side dental clutch teeth that are made to mesh with similar teeth on the front side of the bevel L. This bevel, it must be understood, is not on the same shaft as the gear O, but the shafts carrying the two gears abut within the gear L, which is carried on a hollow shaft for this purpose. When gears O and L are thus locked the drive is direct through the bevels L and K. The latter is on the jackshaft from which double side chains connect with the road wheels. For all other speeds the drive is first transferred from the main shaft to the countershaft, but not back again to the main shaft, the drive from the countershaft being through the bevels D and I to the jackshaft. This feature is advanced by the maker as the merit of the gear box and it is only made possible by using the double set of bevel gears to transmit to the jackshaft. To obtain first or slow speed the gear E is thrown back

ward toward the driver, making it impossible for him to accidentally reverse. The gear box is mounted on steel cross tubes in such a manner that the case is free to float with the frame, with the The reduction latter in any position. from the jackshaft to the road wheels is by sprockets with twenty-two teeth on the jackshaft and those on the rear hubs having thirty-four. Two sets of brakes are fitted. Those for regular use are carried on the jackshaft and are pedal-applied. Within drums on the rear hubs are the emergency brakes, which take the form of metal-to-metal ones, with the expanding shoes operated through togglejoint construction and connected through an equalizer with a lever on the driver's right.

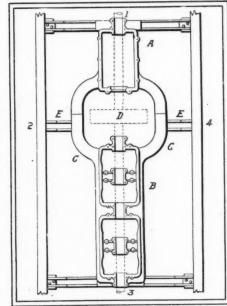
#### GARLICK PROP

The Garlick Auto Prop Co., of Paterson, N. J., is now putting on the market the Garlick prop. This device is to raise a car from the ground while not in use to relieve the wear of the tires from constant pressure on the floor. The prop is made in two styles, one of which is adjustable.

# Current Automobile Patents

Motor and Gear Box Suspension-No. 805,-442, dated November 28; to Fred H. Bogart, New Britain, Conn.—In order to carry the crank case and transmission gear box as a unit the inventor has the first casting A united with the casting B through a pair of curved arms C, the curvature of the arms being sufficient to allow the fly wheel B being carried between them. By this arbeing carried between them. By this arrangement four points of suspension, 1, 2, 3 and 4, corresponding to the angles of a diamond shown by the dotted lines, are obtained. The supports 1 and 3 are direct on cross pieces of the main frame, being equicross pieces of the main frame, being equidistant from the side pieces of the frame. The support points, 2 and 4, are directly on the side pieces, short dropped arms E serving as supports at the center of the curved arms C. If a line be drawn from the bearing point of the right front wheel to that of the left rear wheel and a similar line from the bearing of the left front wheel to that of the rear right, these lines will be respectively parallel to the opposite sides of the diamond, marking the support of the motor and gear case, so that in case a front wheel passes over an obstruction, the strain acts passes over an obstruction, the strain acts in the direction of a line passing through the center of the diamond.

Spring Road Wheel—No. 805,673, dated November 28; to George Schram, Detroit, Mich.—In his construction of a spring wheel, which is intended to serve the same purpose as pneumatic tires, the inventor has pro-duced a wheel lacking in those clumsy feacommon with most spring wheels. Each of the twelve spokes A rest within a V-shaped socket in the hub F, the bottom of the spoke being pointed at B to fit easily within the socket. In each socket is a coll within the socket. In each socket is a coil spring C resting against a metal ring in the hab and with its outer end within a seating in the spoke A. It is through these springs that resiliency is obtained. On the outer end of each spoke is a cap portion D with eye hole, the eye hole part being clamped between the two parts of the wheel rim and the held passing through the weakle held. the bolt passing through the eye hole. holding the rim parts together as well as retaining the spoke in position. A solid rubber tire E is clamped in position between the rings H, the latter being held to the wheel by cross bolts. The coil spring within the spoke K is called upon to bear the brunt of the load with the wheel in the position shown, at which time the spring in the spoke L is not carrying any of the load. the wheel revolves, the spokes, in order to the left of K to carry the load successively. Floatless Carbureter—No. 806,079, dated November 28; to Oscar Gavelek, Chicago—The inventor's carbureter, of the floatless type, controls the flow of gasoline into the mixing chamber by means of a check valve which closes the top of the spraying nozzle. The mixing chamber is a vertical tube, with air entering at the lower end, the mixture passing to the motor from the top. Midway



BOGART'S MOTOR AND GEAR

between the top and bottom is the mixing chamber, in the center of which is the vertical spraying nozzle. Suspended from the top of the mixing chamber is the check valve. On the valve stem is a diaphragm nearly equal in diameter to that of the mixnearly equal in diameter to that of the mixing chamber. Bearing against the top of the diaphragm is a coil spring, having a downward tension and holding the check valve within the spraying nozzle, thereby preventing the flow of gasoline. With the first motor suction, the current of air drawn through the carbureter, striking the lower surface of the diaphragm, raises it against the tension of the spring. With it is raised the check valve, thus permitting the flow of the check valve, thus permitting the flow of

the gasoline through the spraying nozzle.

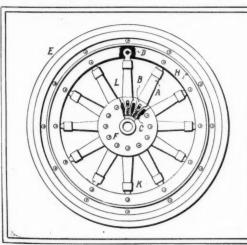
Piston Igniter—No. 805,790, dated November 28; to Benjamin G. Gilbough, Chicago—A novelty is offered in the inventor's igniter or spark plug for a gasoline engine. In most respects the igniter follows standard principles. ples in that the spark jumps between a pair of electrodes, one, A, known as the stationary one and carried in the cylinder head, and the other, B, an oscillating mem-ber in the spark plug proper. The latter is oscillated by being pivoted to a piston C in which is a threaded portion E, through which the electrode B passes. As the gases in the cylinder expand, owing to the explosion, the pressure raises the piston C against the tension of the spring D and the portion E, being threaded, revolves with the upward movement of the piston, the revo-lution serving to rotate the electrode B. After the explosion the electrode is returned

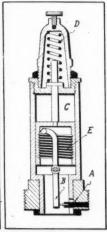
to its normal position by the spring D.

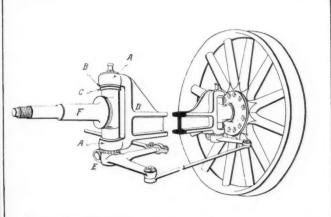
Live Rear Axle—No. 805,740, dated November 28; to William D. Lowe, Columbus. O.-In Lowe's rear axle construction a bevel gear differential is carried in a central houssing, around which is bolted a sprocket for single chain drive from the gear box of the automobile. The differential housing consists of two parts, with flanges for receiving the axle housing, within which are the drive shafts to each wheel. The shafts, instead of being squared at the inner ends, where they carry the bevel pinions, are round and the pinions mounted loosely thereon, but at the shaft ends is a cubical block in the center of the differential. This block serves to lock the bevels with the shaft, the construction eliminating the danger of key-stripping.

I-Section Front Axle—No. 805,716, dated November 28; to Adam R. Demory, Canton, O.—The invention relates to the construction of steering knuckles on an I-section front axle for automobiles. Solid with each end of the axle is the jaw type yoke D with a bearing in each arm A and also an eye hole in each. Fitting within the bearing cavity is an adjustable bushing B, which cavity is an adjustable bushing B, which can be locked within the bearing. The axle spindle F has on the top of its vertical hub a shoulder C resting directly against the bearing. A portion of the hub extends beneath the lower jaw A for the purpose of attaching the tie rod between the knuckles, as well as the rod connecting with the bottom of the steering column. The feature of the invention consists in the construction of the vokes D and the adjustable bushings B.

the yokes D and the adjustable bushings B. Friction Clutch—No. 805,550, dated November 28; to Harry W. Hill, Cleveland, O.— In the friction clutch referred to, on the rear side of the fly wheel, is a circular flange on the outer and inner face of which operate friction shoes carried on a clutch framework on an extension of the crank shaft, the framework being connected by a sleeve and sliding joint with another shaft running to the gear box. In engaging the clutch the shoes acting on either face of the fly wheel flange are moved radially by a toggle joint contrivance so that the outer shoe is car-ried in the direction of the hub and the inner shoe carried outward, clamping flange between them.







SCHRAM'S SPRING WHEEL

GILBOUGH'S IGNITER

DEMORY S 1-SECTION AXLE



E. H. HARRIMAN SEEING SIGHTS OF HONOLULU FROM FRONT SEAT OF WHITE STEAMER

Law Doesn't Work—An idea of the way the new Pennsylvania good roads law works—or, rather, does not work—may be had from the statement that of the 1,548 townships in the state but sixty-four applied during the present year for state aid, their allowance being \$50,000 for 662 miles of road.

New Excuse—In the crusade for aprons for automobiles in Detroit, it is being claimed that oil dropping on the pavement forms a grave danger for horses, particularly animals belonging to the fire department which slip and slide on the greasy pavements. It is claimed three-fourths of the city's disabled horses are injured by falls on asphalt.

Long Island Nominees—The regular ticket put up by the nominating committee of the Long Island Automobile Club is as follows: For president, Alfred Wilmarth; vice-president, Edwin Melvan; treasurer, Charles Jerome Edwards; secretary, Walter G. Pierson; board of governors for 2 years, Frank G. Webb, G. B. Parker and John B. Manuel, Jr.

Tags Ready—State Highway Commissioner Hunter has completed the organization of the automobile division created by an act passed by the last Pennsylvania legislature and is now prepared to furnish licenses to operate motor vehicles and the necessary number tags. H. M. Cutchall, of Crawford county, is in charge of the division and will have at least one assistant. The new law becomes effective January 1 and the state licenses issued will expire on December 31 of each succeeding year.

Aid to Politicians—The Taxpayers' League, of Reading, Pa., is engaged in an anti-pass crusade, it being averred that the councilmen, by reason of having accepted annuals on the railroads, feel in duty bound to favor the latter when legislation affecting their interests come up for action. On Monday and Tuesday last a committee of the league, in two automobiles, visited every one of the thirty-two councilmen in an effort to induce them to return their passes. They landed five of them, the other twenty-seven standing pat.

It required quick work, for the results of the committee's labors were to be reported at Tuesday night's meeting; but the automobiles were equal to the task, and every one of the city fathers was put on record long before nightfall.

Motor Club Ticket—The regular ticket of the New York Motor Club is as follows: President, W. J. P. Moore; vice-president, H. M. Swetland; second vice-president, R. H. Johnston; secretary, A. B. Tucker; treasurer, Frank J. Griffin; directors, W. J. Morgan, M. L. Downs, Robert W. Haff and R. G. Howell.

Means Business—The Crawford County Good Roads Association, of Ohio, held a meeting at Bucyrus last week and perfected a permanent organization. The county commissioners have provided quarters in the court house for the use of the association and monthly meetings will be held. The organization will make an effort to have the state build the proposed Cincinnati-Cleveland state model road through Crawford county.

Brag's a Good Dog—Down New York way they are telling a story on Billy Marion, of the Morgan & Wright outfit. Marion was one of the members of Dave Post's recent hunting party at his Jersey farm. Seated in the ferry house on his return awaiting a boat he was accosted by a stranger, who asked him what luck he had had. Marion put up somewhat of a brag as to his prowess with the gun. His chance friend panned out to be a game marshal and the confession cost Marion \$29.30.

Buckeyes Doing Something—In response to a call issued by the Cincinnati Automobile Club, Vernon H. Burke went to Cincinnati Saturday as the representative of the Cleveland Automobile Club at a meeting to perfect an association of Ohio automobile clubs. The purpose of the state organization will be to secure legislation more advantageous to automobile operators, to improve the roads throughout the state and in general safeguard the interests of automobile owners and drivers. It is not improbable that the state headquarters of such an organization will be located in

Cleveland, as this city has the largest club and the largest automobile population of any city in the state.

Complain of Road Hogs—W. E. Bartlett and W. M. Frazier, of Huntington, Ind., are complaining of the hostile spirit shown by farmers on the road to Fort Wayne. They say the rural people almost crowd them into the ditch and once or twice on a recent trip almost caused them to upset.

Just Curious, That's All—A Pittsburg citizen has entered suit in the Allegheny courts to test the legality of the wide tire order on the new macadamized roads. His contention is likely to be ruled against, for the public in general and especially the automobile public has found the roads much too valuable to be destroyed by narrow-tired wagons.

Boom in Cleveland—The Cleveland Automobile Club has been making great gains in membership since Charles Marvin took hold as permanent salaried secretary. He has more than earned his way by securing over 125 new members, bringing the membership up to more than 300. November was a banner month, twenty-two new members being admitted.

Nothing Too Good for Them—Some of the Chicago aldermen are of the opinion that each city father ought to have an automobile. Commissioner of Public Works Patterson and Alderman Snow, of the compensation committee, have talked over the idea and they decided that the solons could cover their territory much faster and more completely if they had cars.

Throw Up Sponge—President G. E. Turner, of the Automobile Club of Pittsburg, has announced that the members of the club would submit to both the state and city tax inasmuch as the test case instituted by them was decided in favor of the city of Pittsburg. The club members will take out the state license at the regular county office and also pay the city license fee the same as the present year.

Bisons' Nominations—Nominations have just been made for the annual election of the Automobile Club of Buffalo. President A. H. Knoll, being a busy man, has decided not to accept a reelection and in his place Herbert A. Meldrum, head of one of the largest department stores in Buffalo, will be chosen. Other nominations on the official ticket, which undoubtedly will be elected, are: Vice president, F. B. Hower; secretary, Dai H. Lewis; treasurer, Charles Clifton; directors, Edward H. Butler, owner of the Buffalo Evening News; E. R. Thomas, of the Thomas Motor Co., and Seymour P. White.

Winton to Wed-Announcement is made of the engagement of Alexander Winton, of Cleveland, head of the Winton company, to Miss Belle McGlashan, of Paisley, Scotland, the old home of Mr. Winton. Mr. Winton, who is a widower, has been acquainted with Miss McGlashan for a number of years. She is a distant relative of his late wife, who met with a fatal accident by falling from a cliff into Lake Erie 2 years ago. Mr. Winton left for London several weeks ago and the only announcement made at that time was that he was to visit the English and French shows. The marriage will take place at Paisley, Scotland, December 12, after which the couple will take a trip through England, returning to Cleveland from the honey-moon about the first of the year.

Club's Winter Show—The Long Island Automobile Club started its annual winter exhibition of new cars on Friday evening with a display of the Model K Winton, the White steamer and the Lambert friction drive.

Makes Hit With Big Guns—That national celebrities are as fond of motoring as the next one is now an assured fact. E. H. Harriman, the railroad magnate, is one of them. During the recent visit of Secretary of War Taft and his party to Honolulu Mr. Harriman was taken for an outing in a White steamer by Alexander Young, who owns half the sugar and all the cigaros of the Hawaiian Islands.

Powers That Be to Meet—J. Howard Johnson and William F. Hogan will represent the Automobile Club of America at the international conference in Paris, starting next Monday, when the fate of international road racing will be decided. France will then announce definitely its intentions regarding the Bennett and Vanderbilt cups. It is accepted as a foregone conclusion that the holders of these two trophies will decline to defend them and that it will be necessary to act in the mat-



EARL KISER AS HE LOOKS NOW

ter. It is thought probable the scheme outlined by the late Clarence Gray Dinsmore may be adopted—hold an international road race without stops over the Auvergne circuit to decide the championship of the world, run the Bennett in

Italy in conjunction with the Brescia cup and send the Vanderbilt back to America for competition on Long Island.

As Good as New—Earl Kiser, fully recovered from the disastrous fall at Cleveland, is now at Hot Springs, Ark. His artificial leg gives him no trouble and he declares he is as good as new.

No Regard for Piety—Frank J. Smith, a Cleveland broker, lost his Baker electric recently. He left the car standing in the street while he was attending church services and when he came out he discovered someone had made way with it.

War on Women Scorchers-Cleveland police have declared war against women scorchers, as well as those of the more responsible sex. Cleveland has more than the usual quota of women drivers and many of them are most skilful and venturesome. For a long time the police have done nothing more than hold up a warning finger as the fair scorchers sailed past. Bicycle Patrolman Gilbridge made the first arrest of a woman scorcher-Mrs. Carrie Jennings, a Euclid avenue society woman. The court taxed the protesting woman the usual \$10 and costs, thus establishing a precedent which is expected to make the fair sex have some regard for the city ordinances.

#### LEGAL LIGHTS AND SIDE LIGHTS

#### HOOSIER LAW VOID

In the case of the state against John Schott, charged with violation of the automobile law, Judge Vaughn, of Bluffton, Ind., held that the new law is void for the reason that one section of it reads, "to the discretion of the jury," to determine what shall constitute a reasonable time to comply with the precautions prescribed by the law. After stating explicitly what the motorist shall do in case of meeting a rig, the law tries to say what the owner of the machine shall do when overtaking a rig, by stating, "when signaled as above prescribed, shall reduce the speed of such motor vehicle, and, before passing, shalll allow a reasonable time for such animal or animals, to be driven to the side of the road." Judge Vaughn held that a reasonable time might be construed as one thing in one court and another in some other court, therefore the law would not be uniformly enforced throughout the state and a man could not be made liable to acquittal in one county for acts that would subject him to conviction in another.

#### DENVER TALKS LAW

Protests against the automobile ordinance now before the Denver city council were made by a committee from the Colorado Automobile Club at a meeting of the judiciary committee of the supervisors. The \$2 a year tax on machines was strongly opposed and Supervisor Webb explained that the revenue thus obtained would be devoted to the fire and police pension fund, whereupon the automobile men declared all drivers of vehicles should be assessed accordingly. The question of lights on the rear of machines to make the number visible at night was deferred for further investigation, as the motorists

claimed that many machines were so constructed that lights could not be displayed according to the requirements of the ordinance. The restriction of speed to 4 miles an hour in the business section was changed to a rate "reasonable and safe, consistent with the conditions of traffic." The question of age limit for chauffeurs still remains unsettled.

#### THROUGH HOSTILE EYES

Legislative work planned by the Bay State Automobile Association for this winter will keep the Massachusetts motorists busy. According to the views of the motorphobists, the present speed regulations for automobiles should be maintained. Cities and towns should have the absolute right to reduce the limit, without appeal to the state highway commission. It should be the duty of judges to determine the intent and circumstances of each violation of the speed limit. These judges should have the right to place the case on file or impose a reasonable fine in first or second offenses. The third offense should be considered a wilful breach of the law, and should be punished by a severe fine, by imprisonment of not less than 10 days or more than 1 year, and the revocation of all rights to operate or use an automobile for a period determined by the magistrate. All cases of reckless operating where a specific act endangers life or limb should be punished by fine or imprisonment. No officer should receive extra compensation for the arrest of an automobilist. A provision should be made for the punishment



of reckless driving, and a penalty for the same regardless of the speed limit. All moneys collected by fines should go to road improvements,

About January 1 a bill will be drafted embodying these recommendations, and it will be presented to the legislature, J. A. Brackett representing the interests behind the measure. These points are embodied in a circular letter, which will be sent throughout the state in a short time. The right of the highway commission to act as a court of appeals is opposed by this movement, which holds that this is an illadvised arrangement. It is urged that revocation of a license for continued offense against the speed laws should be not merely possible, but absolute and unconditional. At present this matter rests with the highway commission, which may or may not revoke the license. It is urged that a third offense should of itself revoke a license at once, irrespective of the action of the highway commission.

#### AMEND MISSOURI LAW

Kansas City's automobile ordinance has been passed by the upper house, after it had been duly trimmed of all the features to which the automobile owners objected. Sections 3 and 4, providing for the examination of all persons operating machines, were cut out. The identification numbers system will be retained. This section calls for numbers 3 inches long, to be hung anywhere on the rear of the machine. There is another paragraph requiring "a light which must be plainly visible 10 feet away." The ordinance as passed by the upper house retains the section limiting machines to 12 miles an hour on the boulevards, and all over the city, excepting north of Eighteenth and west of Troost, to 8 miles an hour.



A SPEEDY light delivery car, capable of 1,500-pound loads and weighing about 2,000 pounds, is being marketed by the Soules Motor Car Co., of Grand Rapids, Mich., which is having the machines built by the Michigan Automobile Co., of Kalamazoo, Mich. Light delivery work in towns and cities is the field best suited for this little machine, which, with its high motor power and a speed range as high as 25 to 30 miles an hour with its full load capacity, should be a useful addition to concerns requiring speed in the delivery system.

In designing the machine accessibility has been aimed and in so doing the twocylinder motor has been placed beneath the nood and the sliding gear set connected closely, so that nothing but the propeller shaft is carried beneath the load-carrying platform. Angle pieces form the chassis frame, the sides being slightly offset at the sides of the motor and tied in the center and at the rear by single pieces riveted in position and reinforced by gusset plates. One cross piece aids in carrying the rear of the gear box, another further back carries the muffler, and the back one acts as an end cross piece. The motor and gear box form an integral case of three parts, the gear box, a clutch casing and the crankcase, all three being bolted together and carried on a three-point suspension. Three-quarters elliptic springs are used front and rear, both sets being of the same dimensions, 42 inches long, 2 inches wide and formed with six leaves. The halflength top part is bolted to the frame pieces, and the free end of the bottom half is shackled by a long link directly beneath the frame pieces. The wheel base is 96 inches, tread standard and 34 by 21/2-inch solid rubber tires are fitted.

Compactness has not only been sought, but accomplished in the grouping of the motor and gear box in the Soules car. The placing of the two cylinders crosswise in front and having the crankcase housing C extended to the rear to partly form the clutch case D, and this in turn connected with the gear box E, gives a design in which practically all of the power and transmitting plant is carried beneath the forward part of the wagon, so that it is comparatively easy to make examinations or repairs without disturbing the load carried. The cylinders A have on the head small integral flanges B, which, resting direct on the side pieces of the main frame, support the crankcase, and the rear end of the gear box takes its support from a special frame cross piece, which it is bolted beneath. Each cylinder has a 51/2-inch bore and 5-inch stroke, the power being obtained

at normal crankshaft speed. The crankshaf Y is a double throw drop forging, with throws set at 180 degrees, and revolves on a pair of bushed bearings, one Z bolted in the front end of the crankcase and the other Z1 formed by a large disk bolted to the rear part C of the crankcase, serving as a partition between the interior of the crankcase and the compartment D enclosing the clutch. The shaft has also a short third bearing in the front end of the gear box at Y1, where it abuts the end of the main gear shaft.

The pistons are made with four eccentric flat-lap rings, three outside of the wrist pin and the fourth near the inner end of the piston, the latter acting chiefly as a lubricant distributor. Connecting rods are 10 inches from center to center and at the

CHASSIS OF SOULES CAR

outer ends have bronze bushings for the hollow wrist pins but carry babbitted bearings for the crank throws, which material is also used in the two crankshaft bushings. The wrist pin diameter is 1½ inch, that of the crank throws 1½ inch and the crankshaft bearings 1¾ inch.

Both sets of valves are mechanically oper ated and are carried horizontally in the valve ports on the tops of the cylinder heads, so that the push rods and valve stems lie along the top sides of the cylinders. The valve heads are beveled to 45 degrees and are riveted to the stems, which work in long integral sleeves, surrounded by the springs R1 resting on seatings keyed to the valve stems. In operating the valves the camshaft T in the top part of the crankcase has its cams pinned in position. They bear upon rollers in the yoked ends S of the push rods. The arms of the yokes being on opposite sides of the camshaft, act as guides for the rods, preventing their turning, and coil springs R3 within the crankcase and surrounding the push rods serve to constantly retain the latter in contact with the cams. On the outer end of the push rods are fiber blocks R2, against which rest the ends of the valve stems. The camshaft is driven by a small pinion on the front end of the crankshaft.

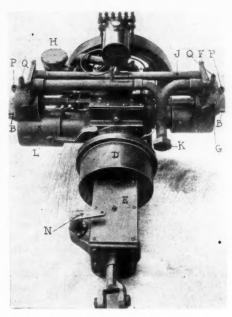
One feature of accessibility must be noted in that the entire top of the crankcase is removable and when off the camshaft, push rods, push rod springs and camshaft gears are disclosed. The carbureter H is located in front at the right side and its mixture is conducted to the cylinders by a branching pipe J, and a similar pipe K conducts the exhaust to the muffler. Both pipes are retained through long yokes at either end of the cylinder, the yokes resting on the end of each pipe. Spark plugs are inserted vertically in the cylinder ends at P and water leaves each jacket through the openings Q. passing by separate pipes to the top of the radiator. From the bottom of the radiator it is drawn by gear-driven pump and forced into the bottom part of each cylinder

The timer used differs from most of its class in that in advancing and retarding the spark the high tension wires to it remain stationary. In doing this the commutator casing is made with two bronze segments embedded in it and against the outside of these segments bear stiff springs connected with the high tension wires, which terminate in insulated binding posts to which the springs are connected, so that when the casing is rotated the segments are of sufficient length to remain in constant contact with the springs from the wires.

The revolving contact is a cam-shaped wiper which does not, as might be expected, bear upon the segments, but against small contact points carried on long curved springs that are fastened at one end to the segments, the object of the construction being to give a very light contact. The coil is carried on the dash and batteries beneath the seat. A switch is furnished.

Motor lubrication is by a six-feed oiler carried over the center of the crankcase. From the oiler one lead goes to each crankshaft bearing, one to each of the cylinders and another to the top of each connecting rod body.

The rear end of the crankshaft is squared where it carries the male part D1 of the cone clutch and the shaft continues still further to the rear, ending at Y1 within the sleeve formed by the female portion D2 of the clutch and the master gear E1 in the front end of the gear box. The cone is of the ordinary leather-faced type and is held engaged by four coil springs, none or which can be seen in the illustration. In disengaging, a plate D5, with the regulation end thrust ball bearings, is used. Into this plate are inserted four stude D6, each passing through holes in the web of the male part C of the clutch. On their outer ends they carry a flanged washer and nut. The clutch springs act between the washer and the web portion of the part D1. To disengage the cone, D3 is carried forward by pedal movement and the inclined portion of the cone raises the front end of the lever D4, which gives a backward movement to the short arm of the lever bearing on the end of the stude D6, resulting in the male part D1 being carried to the front and out of engagement, since the plate D6 rests against the female part D2 and cannot move to the rear. The end thrust bearings are only in use when the roller on the lever D4 is ascending the inclined portion of the cone, as there is a flat portion or rest to



Soules Motor and Gear Box Group

the cone just in rear of the incline and when the roller reaches this part end thrust ceases. The yoke L, shown in the assembly of the motor, is connected with the clutch pedal and also to the collar on the cone D3.

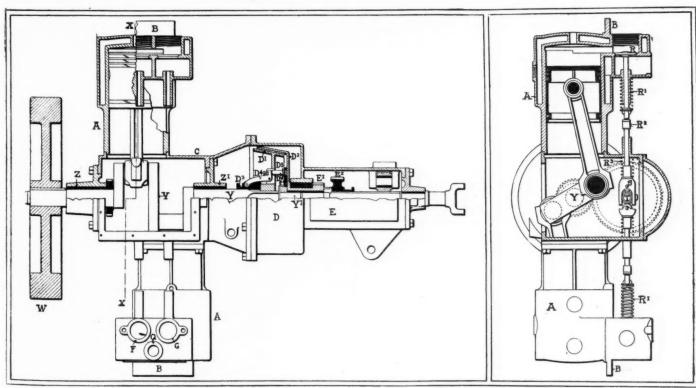
Two forward speeds and one reverse are given in the gear set, which is of the snaing variety with the main and counter shafts in the same vertical plane, the former squared and carrying one sliding member the half of which is shown at E2, only half of the interior of the gear box and clutch being shown. On its front side are interlocking teeth that, for direct drive, are locked with similar teeth on the rear side of the master gear E1, locking the main shaft with the female part D2 of the clutch and, when the latter is fully engaged, causing the gear shaft to rotate at the same

speed as the crankshaft. For second speed the gear E2 meshes with a smaller gear on the countershaft. The usual idler is required in reversing. A universally-jointed propeller shaft connects with a spur gear differential, of home manufacture, in the rear axle. Both the propeller shaft and the two driving members in the axle revolve on home-made roller bearings working in oil. A touch of accessibility is added to the axle by splitting the differential housing horizontally, so that the entire top half can be removed to examine the parts, without disassembling any of them. Both of the axles are made at the factory.

The body is of typical light delivery type, with short bonnet in front, driver's seat for two or three persons and low sides surrounding the carrying platform, permitting of the attachment of a covered box if desired. The driver sits on the left and to his right is the change speed lever, rising through the center of the footboard, the object of such position being the protection afforded by being located where injury from accidents is practically impossible. On the steering column beneath the wheel are the spark and throttle thumb levers, between the change speed lever and the steering post is the clutch pedal and to the left of the steering column is the brake pedal. The brakes are carried in drums on the rear hubs and, in the chassis view, the method of using a long cross evener coupled with the brake pedal, is shown.

#### INNOVATION IN SWEEPERS

An electric motor street sweeper is the invention of Bernard Kern, Jr., of Toledo, O. The sweeper is built on the same plan as a commercial motor truck. Being driven by an electric motor, a rotary brush agitates the dirt and refuse of the street, when a conduit, which is provided with a rotary fan, which creates a continuous and strong suction, conducts



COMBINED CRANK CASE, CLUTCH CASING AND GEAR BOX IN SOULES LIGHT DELIVERY CAR

the sweepings upward, over the head of the operator or driver, and into the box receptacle in the rear of the machine. For over a decade the inventor has worked studiously at the new street cleaning device. It was in 1892 that he conceived the idea of a street sweeper that should be worked on the same principle as an ordinary carpet sweeper, although this principle has been improved upon. Thirteen years ago he set to work constructing what proved a year later to be a crude and bulky affair. A traction steam engine was secured, and from the platform at the rear a rotary broom, pivoted from the platform and driven by a chain that connected it with the engine, crudely picked up the refuse from the street and deposited it in a dirt box further to the rear. The first experiment was beset with many discouragements, but the inventor was not dismayed. This first, as well as all subsequent experiments, was made at Fremont, O., as at that time D. June & Co. were successful builders of traction engines and boilers at that point. This first experiment was a failure in a way, but the inventor set to work to build another sweeper, securing an upright engine from the Huber Mfg. Co., at Marion, O. Then the June people put up another engine for the third experiment, and still failing to make the machine a marked success, this third machine was built.

Success did not come until Mr. Kern had built an entirely new machine and installed electric motors to furnish motive power. Whereas the new sweeping machine weighs 5 tons, and has a wheel base of 120 inches, the electric motor for driving the machine along the street is only a 5horsepower affair. The inventor states that even a motor of that capacity is more than is actually needed. Another electric motor, developing only 21/2-horsepower, operates the sweeper proper, the rotary broom, fan, etc. Willard storage batteries of forty cells and 63 amperes are used with marked success. The motors and controller were especially constructed by the Hertner Electric Co., of Cleveland, O. The motors are not unlike any other electric motor, but the controller is, as it is especially adapted for handling two motors at varying

It is planned to manufacture two sizes of the new electric sweeper, the larger one to work on wide and long thoroughfares, and the smaller machine is intended for narrow and residential streets, also for getting right up to the curbing to get all the dirt. Then by putting the smaller machine on a crowded street, and following right along in the line with other vehicles, it will sweep where white wings are unable to work because of passing vehicles which may form a continuous line. The smaller of the two sweepers has a frame 151/2 feet long, over axles of different lengths, the front one being 48 inches, the rear one 66 inches. The rear wheels are 36 inches in diameter, and the front wheels are 34 inches. Turner endless tires are used, 41/2-inch for the rear wheels and 4-inch for the front. The weight of the machine and the adhesiveness of the rubber tires give the sweeper a firm hold at all times. Morris single side chain drive is furnished.

The rotary broom, located directly back of the front wheels and composed of half and half of heavy steel wire and African fibre, is 40 inches long, but on the larger sweeper, the brush is 81/2 feet in length. The broom is positioned at right angles with the length of the body of the machine, always being directly crosswise to the direction the motor sweeper may be going. According to the inventor's idea, more dirt can be worked up with the broom in this position than if the broom was placed diagonally across. The inventor states that crevices in pavements of all kinds can be cleaned to the depth of 11/2 inches. The driver is seated at a steering wheel the same as in an automobile. To the left side, in front and above him, is the box in the dust conduit, this box containing the rotary fan. The driver always has the broom at his command, lifting or lowering the rotary part by means of a foot lever.

As the broom rotates, the dust and dirt, in fact all kinds of refuse, are greatly agi-

the new electric sweeper there is no disease and filth scattered broadcast, but instead the whole mass is gathered into the machine. The germs are not washed into the sewers and catch-basins, either, to arise and again permeate the atmosphere.

As the inventor puts it, sprinkling is done away with. The sweepings are not gathered into wind-rows and piles, then loaded into wagons, all of which constitute two-thirds of the cost of cleaning streets. Sprinkling before sweeping softens dirt and mud is the result, a good portion of which is packed down and not removed. In the use of the Kern sweeper the street is kept so clean that wind and the passing of vehicles fail to raise any dust.

The expense of keeping the streets of a city clean by the Kern automatic sweeper, as compared with the present methods, must not be overlooked. The expense is light. It takes by the present old method ten teams, three men on that many sweepers, one man on a sprinkling wagon, twenty men in the gutter, three



KERN ELECTRIC STREET SWEEPER AND DIRT COLLECTOR

tated, the rotary fan in the conduit creating a strong suction from the broom, the suction drawing the dust and dirt to the top of the machine and back to the dirt box. The box in the smaller machine—the box being 8 feet long, 4 feet wide and 6 feet high—will carry 4 cubic yards of dirt. The other sweeper is built on proportionately larger dimensions in every way. The average speed of the new electric motor sweeper is 4 miles per hour when the machine is not sweeping. When sweeping is being done, the speed is from  $2\frac{1}{2}$  to 3 miles per hour, all depending on how dirty the street is.

In the perfecting of such a street sweeper, one of the greatest evils and destroyers of life is done away with, as the street is thoroughly cleaned without raising any dust. The great thing about the new sweeping device is the way it works, and the protection it affords to health in the cities, where nearly all the diseases come from germs in the air, and are to a great extent largely circulated by the present-day deadly sweeping machines. With on dump wagons, at a total cost of \$55.50, according to one conservative estimate, to clean 4 miles of streets in 9 hours, or an average of a little less than \$14 for each mile. On the other hand, taking the new Kern automobile sweeper, the fuel needed for 9 hours costs \$1, the operator \$2.50, and 8 miles of street will have been cleaned. Allowing two men and two teams and wagons to be employed to take the refuse from the machine, allowing \$6 extra for that branch of the help, and the same streets can be cleaned at a total expense of a little over \$1 per mile. It usually takes an average of 35 minutes for a gang of men on the street to load a wagon with the street sweepings, but with the conveyors on the Kern sweeper, which work automatically, the wagon can be readily loaded in 10 minutes. Mr. Kern and Jacob D. Kiser, the latter being associated with Mr. Kern in the new invention, are forming a company to manufacture the machines, Congressman James H. Southard, of Ohio, also being interested.

# BRIEF BUSINESS ANNOUNCEMENTS

Syracuse, N. Y.—The Amos-Pierce Co. has taken the agency for the Royal Tourist.

Cincinnati, O.—An automobile garage has been opened at 130 East Ninth street by R. C. Crowthers.

Brooklyn, N. Y.—The garage of the Brooklyn Riding and Driving Club is nearing completion, and will shortly be opened.

Syracuse, N. Y.—The R. M. Cornwall Co., of Syracuse, N. Y., will auction off all its automobiles preparatory to going out of the automobile business.

Glen Cove, L. I.—Endeavors are being made to induce an automobile company to locate in the old plant of the Glen Cove Starch Mfg. Co. The location is an ideal one.

Mankato, Minn.—Fred Day and Otto Schwender have formed a partnership under the firm name of Schwender, Day & Co., and will open an automobile livery and garage.

Detroit, Mich.—A. Fisher, who has been engaged in the manufacture of wagons and carriages, has converted his establishment into an automobile salesroom and repair shop.

St. Louis, Mo.—The Cadillac agency has been taken by the Bagnell Automobile Co., which will open shortly on Olive street. The Cadillac was formerly represented by the Halsey Automobile Co.

Hartford, Conn.—The Winkley Co., maker of oiling devices, will shortly remove its factory to Detroit, Mich. It has added to its line the Garllus carbureter and the Eureka separator.

St. Louis, Mo.—The Colonial Automobile Co., a recently incorporated concern, has taken the agency for the Reo and Stoddard-Dayton cars. This company will be located at 3944 Olive street.

Denver, Colo.—Mr. Mathewson, of the Mathewson Automobile Co., has had plans prepared for a new garage to be built at 1622-1626 Broadway at a cost of \$100,000. It is to be completed by January 1.

Gardner, Mass.—Levi H. Greenwood is to build a new automobile station which is to be run in connection with the Windsor hotel. A Worcester firm, Scovil & Wheeler, has the contract for the work.

Syracuse, N. Y.—The Franklin Autocycle Co., of Hammondsport, N. Y., has built a motor for George T. Tomlinson, of Syracuse, to be used in the new airship in which he intends to cross the continent.

Detroit, Mich.—The Standard Auto Co. announces that instead of the Detroit Motor Car Co. it will handle the Peerless. The company is located at 260 Jefferson avenue, but will be in its new place on Woodward avenue in 90 days.

Cleveland, O.—The Central Automobile Co. has been acquired by Alvin H. Smith and A. B. Weil, T. T. Long, who has been at the head of the company, having retired. The company has a large garage and salesroom at 38 Vincent street, and handles the Studebaker.

Topeka, Kan.—The Topeka Auto & Cycle Co. has taken the agency for the Mitchell car.

St. Louis, Mo.—The Parker Automobile Co. has taken the agency for the Baker car, This company also handles the Thomas and Autocar.

Fort Wayne, Ind.—A garage and automobile repair shop is to be established by Amos J. and Peter Roussey under the name of Amos J. Roussey & Brother.

Greenfield, Mass.—Charles F. Peck and George Parsons have sold their automobile station in Federal street, to Manley Brothers, of Brattleboro, Vt.

Pittsfield, Mass.—The new automobile factory on the site of the old satinet mill is practically completed and will be ready for occupancy about January 1. Alden Simpson is the owner of the plant.

Syracuse, N. Y.—Richard E. Kolbe, who has been connected with the Amos-Pierce Automobile Co., has leased a building at 232 East Water street, which will be fitted to be used for an automobile livery.

Louisville, Ky.—C. D. Simpson has retired from the firm of the Simpson-Strauss Automobile Co., the partnership having been dissolved. Garnett S. Zorn, John Mason Strauss and Harry S. Volz have formed a new corporation to carry on the business of the old firm. The new concern has secured the agency for the Stevens-Duryea car, and a general agency



#### LATE INCORPORATIONS

Newark, N. J.—The Turbine & Locomotive Car Co. has been incorporated with a capital stock of \$500,000. The company will manufacture engines and vehicles of all kinds.

New York City—The American Generator Co. has been incorporated to engage in the manufacture of vehicles and motors. The capital stock of the company is \$100,000.

Rochester, N. Y.—The McKinley Motor Car Co. has been incorporated with a capital stock of \$20,000. The company will engage in the manufacture of motor cars.

Buffalo, N. Y.—McNaughton & DuBroy have been incorporated to manufacture motors, engines and automobiles. The capital stock of the company is \$10,000.

New York City—The Blackall & Baldwin Co., manufacturer of electric motors, has been incorporated with a captal stock of \$50,000.

Boston, Mass.—The Penn Auto Supply Co. has been incorporated with a capital stock of \$100.000. It will deal in automobile supplies.

Albany, N. Y.—The Babcock Electric Carriage Co., of Buffalo, has been incorporated with a capital stock of \$100,000.

Brooklyn, N. Y.—The Private Garage has been incorporated to deal in automobiles, etc. Capital stock, \$2,000.

Flint, Mich.—The Welch Motor Car Co. has certified to an increase of capital stock from \$100,000 to \$250,000.

Newark, N. J.—The Calvert-Zuri Auto Co., of Newark, has been incorporated with a capital stock of \$20,000.

Battle Creek, Mich.—The American Motor & Cycle Co. has been incorporated with a capital stock of \$10,000.

New York City—The Triumph Motor Car Agency has been incorporated with a capital stock of \$15,000.

Detroit, Mich.—The Walker Motor Car Co. has been incorporated with a capital stock of \$300,000.

covering Kentucky, Alabama and Tennessee for the Pierce Great Arrow.

Nashville, Tenn.—J. S. Roller will handle the Reo line exclusively in this city and adjacent territory.

Topeka, Kan.—J. M. Padgett will handle the Waverley electric cars in addition to the Stevens-Duryea output.

Cincinnati, O.—The Cleveland Automobile Co. is endeavoring to secure a site for the location of an agency here.

Harvard, Ill.—The Three Manley Brothers have taken the Mitchell agency and will make the automobile business their leader.

Charlevoix, Mich.—G. G. Williams & Son have removed to New Bedford, Mass., and will open an automobile repair shop and garage.

Philadelphia, Pa.—The Diamond Motor Car Co., 2117-19-21 North Broad street, has secured the Philadelphia agency for the Jackson car.

Youngstown, O.—The Youngstown Auto and Repair Co. has been organized to handle the Reo exclusively in Mahoning and Turnbull counties.

Colorado Springs, Colo.—The 1906 agency for Franklin cars has been taken by W. J. Batchelder, president of the Anthony Motor and Manufacturing Co.

Columbus, Ga.—A charter has been granted to the Albright Mfg. Co. This company is capitalized at \$14,000 and will carry on a general manufacturing and repair business.

Springfield, Mass.—The interests of the Erickson Mfg. Co. have been taken over by the Ericka Mfg. Co., which has been organized with a capital of \$10,000 to push the Ericka hand soap.

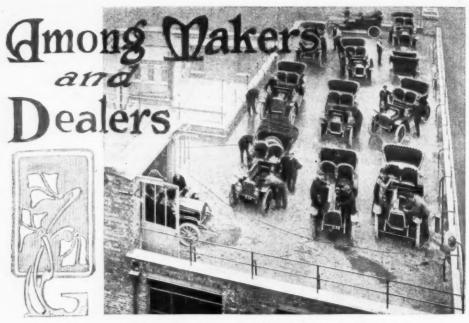
Detroit, Mich.—Young & Miller, 254 Jefferson avenue, have been succeeded by Fee & Bock, Mr. Young retaining his position as manager and the company continuing to represent the Elmore.

Jersey City, N. J.—To provide for the increasing demand for W. J. Kell's honeycomb water coolers, radiators, tanks and mufflers, the plant has been removed to the new five-story building at 62 Van Winkley avenue.

New York City—The firm of L. J. Carpenter has sold for Thompson W. Decker to Harry M. Austin a four-story stable at the northeast corner of Thirty-third street and Park avenue, 50 by 100 feet. The building will be made into a garage.

Philadelphia, Pa.—F. W. Stockbridge, former manager of the Reo Philadelphia branch, has accepted the position of sales agent for the Foss-Hughes Motor Car Co., of the same city, which handles Cadillae, Pierce-Arrow and Baker electric cars.

Bridgeport, Conn.—The Wolverton Motor Works Co., of Grand Rapids, Mich., has secured an option on a tract of land on Bay street, with a frontage of 600 feet on the Bridgeport harbor. The company will establish a plant there, providing the common council will abolish two streets. The company manufactures all sizes of marine motors.



ROOF OF ARGYLL LONDON BRANCH USED FOR GARAGE PURPOSES

Bennett Changes—A. L. Bennett, former manager of the de Dietrich branch at Boston, is now assistant manager of the Mors Automobile Co., of New York.

Greeley Likes Motoring — General Greeley, chief of the United States signal service, is an enthusiast over automobiling since his experience driving a Thomas car while in Nome, Alaska, last August.

Tradesman Weds—Richard Harry Johnston, of New York, publicity engineer for the White Sewing Machine Co., was married last week to Miss Winifred Vaughan, daughter of Dr. and Mrs. J. A. Vaughan, of Brooklyn.

Electric Siren—Alden I. McMurtry, of New York, of Ormond timing apparatus fame, is now having his latest invention, an electric siren, manufactured. It will shortly be put on the market by the New York Motor Car Co., of which he is a stockholder and official.

Drops Providence—Wilbur C. Walker, secretary of the Pope Mfg. Co., has sold the Providence branch house effects of the company to the Shepard Co., of Providence, a large dry goods house which will maintain it as an automobile salesroom and garage. The Shepard Co. will handle the line of Columbia cars and the Pierce products.

S. & M. Branch in Paris—Smith & Mabley, of New York, importer of Mercedes, Renault and Panhard cars, and manufacturer of the Simplex, is to establish a Paris branch. L. P. MacNamara has sailed to take charge of it. As fully one-quarter of the S. & M. customers take delivery of their cars abroad the branch will be installed to look after them and assist them in shipping the cars to this country. The branch will be opened very shortly.

October Imports—According to the latest government returns ninety-five automobiles, valued at \$409,841, were imported into this country during October, while during the 10 months ending with that month the number of cars imported was 390, valued at \$1,475,299. During these same periods the imports of automo-

bile parts were valued at \$17,921, and \$86,674, respectively.

Back in Gotham—I. H. Manning, who went to Chicago from the White branch at New York, to join Webb Jay's force, has returned and is now on the selling staff of the Franklin department of the Decauville Automobile Co.

Joyce Moves—James Joyce, formerly of the Electric Vehicle Co., has gone with the American Locomotive Co., as assistant to Albert Otto, the general manager. Mr. Joyce is a veteran of the bicycle days and is well known through his long connection with the Pope Mfg. Co.

Makes a Hit in France—The Rushmore Dynamo Works, of Plainfield, N. J., has decided to open an agency at 79 Avenue de la Grand Armee, Paris, where a stock of searchlights, generators and supplies will be carried. S. W. Rushmore will be at the Paris show, after which he will tour through France and Germany in a 60-horsepower Fiat.

Vicqueots Arrive—The Vicqueot Co., of which Hector H. Havemeyer, of the Vehicle Equipment Co., is president and Louis Caswell is manager, now located at the former de Dietrich garage, on West Forty-eighth court, New York, has received the first samples of the new Vicqueot cars. They are built at Puteaux, near Paris, at a factory now owned by Mr. Havemeyer. They appear in two models—a 40-45-horsepower and a 28-32-horsepower.

Stearns Spreading—The F. B. Stearns Co., of Cleveland, has decided that despite the fact that it erected a large addition last fall, its present quarters are still too small to take care of the demand that is now apparent. President Stearns has had plans prepared for an addition two stories high and 60 by 150 feet. Ground has already been broken. It is a rush contract and it is expected that the building will be ready for occupancy by the first of the year. It will be fitted up as testing and experimental rooms, while the upper floor will be used for storage and drafting

room, converting the spaces at present occupied by the departments mentioned into an additional machine shop.

Fiat Garage Nearly Ready—Hollander & Tangeman, New York, will take possession of their new garage at Broadway and Fifty-sixth street, on December 20.

Hotel Garage—The Rickers, of Poland Springs, Me., who became wealthy through the sale of spring water and the conduct of the Springs hotel in Maine and the old Astor house in New York, are now building a mammoth garage in South Poland for the accommodation of guests at their Maine hotel.

Foreign Business Increasing—F. M. Keaton, manager of the sales department of the Pope-Toledo plant, is authority for the statement that the foreign trade for the past season was about four times what it was for the previous season. He furthermore stated that foreigners were taking about 6 per cent of the production of the Toledo plant.

Subscription Shark at Work—Complaint is made by Motor, of New York, that an unauthorized person, who has been traveling under the name of G. K. Buck, Leon Ames and Walters, has been soliciting subscriptions and classified advertising which have never been turned in. The man is described as being about 5 feet 11 inches tall, smooth shaven and with a nervous twitching of the face. Motorists are warned to beware of imposters and to telegraph Motor in case this individual turns up.

Foreign Shipments-The returns for the 10 months ending October, 1905, show that automobiles and parts to the value of \$2,369,621 were shipped abroad during that period, as against a value of \$1,576,-877 for the first 10 months of last year and \$1,311,960 for the corresponding period of 1903. Classified as to countries, the shipments during the first 10 months of this year were divided as follows: United Kingdom, \$604,782; France, \$254,030; Germany, \$101,998; Italy, \$154,325; other Europe, \$222,817; British North America, \$501,765; Mexico, \$150,042; other West Indies and Bermuda, \$124,552; South America, \$48,938; British East Indies, \$28,602; British Australasia, \$85,548; other Asia and Oceania, \$60,591; Africa, \$28,737; other countries, \$2,894.

Prices in Dayton-Automobile dealers in Dayton, O., have issued the following schedule of prices: Repairs, 60 cents per hour; helper, 40 cents per hour; Sunday and night work, 75 cents per hour; washing, polishing and tire work, 50 cents per hour and no charge less than 50 cents; no adjustment or small repairs less than 25 cents; towing in machine or using machine owned by garage for repairs, etc., \$1 per hour for use of machine and 60 cents per hour for each man used; storage, 12 or 24 hours, 50 cents; dead storage, runabouts, \$3; touring car, \$5 per month; in and out storage, runabout, \$5; touring car, \$7 per month; storage, washing, cleaning and polishing runabout, \$9; touring car, \$15 per month; storage, washing, cleaning, polishing and delivering runabout, \$12 per month; touring car, \$18 per month; gasoline, 15 cents per gallon; 76 gasoline, 20 cents per gallon; special oil, 75 cents per gallon; engine oil, 60 cents per gallon; transmission oil, 60 cents per gallon; renting, \$3 first hour and thereafter \$2.

English Ingenuity—It has remained for the British to utilize the roof of a garage for the purpose of washing cars, the Argyll, of London, having adopted this scheme.

Sail for France—Sidney B. Bowman, W. Tilford Jones and Clovis Bertrand, of the Bowman Automobile Co., New York, and Albert Champion, of Boston, were among those to sail last week for the Paris show.

Doing It Right—Manager Tate, of Douglass, Andrews & Co.'s New York headquarters, is touring New Jersey in a Berkshire ear placing agencies for the firm, which has contracted for the Berkshire output.

Hartford Doings—The Palace Auto Station of Hartford, Conn., will continue to handle next season the Thomas, Locomobile, Autocar and Pope lines, which it has handled in the last two seasons, while Brown, Thomson & Co., of the same city, will sell the Stevens-Duryea, Winton, Franklin and one other car not now determined upon.

Tolerton Estate—According to the report as made by the appraisers of the estate of the late E. W. Tolerton, who was one of the principal stockholders in the Consolidated Mfg. Co., manufacturer of the Yale automobile, the deceased left an estate estimated to be worth \$456,486.88, a large part of which was in the stock of various corporations.

Witherbee Move—The Witherbee Igniter Co., manufacturer of Witherbee storage batteries, has moved from 27 Thames street to larger quarters at 541 West Forty-third street, New York city. The new factory is five stories high and will have a capacity of 1,000 batteries a week for the automobile trade, while at the same time the company can carry on the manufacture of larger batteries for stationary work. The company announces it is supplying forty-five automobile and motor boat makers.

Thomas in New Factory—The new plant of the E. R. Thomas Motor Co. at Buffalo was opened for work on Wednesday, when a number of workmen were started at the benches on the first floor. The new building is not yet completed, but work is being rushed on it, and it is thought it will be in shape within a short time. It is of concrete construction and is the form of an irregular L, 190 feet by 195 feet. It is three stories in height, and, when completed, will give the company 118,000 square feet of floor space.

Export Trade Growing—The latest compilations of the government statisticians afford further evidence of the growing importance of the American automobile export trade. During October last these exports were valued at \$133,988, as compared with a value of \$130,891 for the corresponding month of last year. Shipments during October last were made as follows: United Kingdom, \$50,136; France, \$2,190; Germany, \$8,162; Italy, \$1,740; other Europe, \$8,903; British North America, \$18,715; Mexico, \$13,464; other West Indies and Bermuda, \$12,274; South America, \$5,571; British East Indies, \$3,620;

British Australasia, \$4,043; other Asia and Oceania, \$1,318; Africa, \$2,716; other countries, \$1,136.

Oldsmobile Recruits—K. C. Darling, formerly with the Peerless agency, and W. J. Lasher, until recently with the Homan & Schultz Co., the metropolitan agent for the Rambler and National, have joined the selling staff of the Oldsmobile Co., of New York.

Buick Opening—H. T. Koehler, of Newark, N. J., sales agent in the metropolitan district of the Buick Motor Co., has just opened a New York branch at Broadway and Fiftieth street. F. G. Benson is the local manager, though Mr. Koehler runs over from his Newark store for an hour or two each day.

In Old Riding School—The Cook & Stoddard Co., of Washington, D. C., have opened a garage in the old riding academy at Twenty-second and P streets, N. W., which it will operate in connection with its large salesrooms on Connecticut avenue. Its 1906 line will be the White, Baker, Franklin and Locomobile.

Shanks Home—Charles B. Shanks, of the Winton Motor Carriage Co., is back from his exposition tour across the continent and is now making a flying trip calling on branch stores. All of the Winton branches have received their new models and Mr. Shanks will give additional pointers and instructions as to handling them.

Fight For Office—A lively campaign is promised the members of the Buffalo Automobile Trade Association, J. A. Cramer, a prominent retail automobile dealer, and E. C. Bull, manager of the city sales department of the George N. Pierce Co., having been nominated for the presidency. For vice president W. C. Jaynes and G. H. Poppenberg are the candidates. D. H. Lewis is the sole candidate for secretary, as is John J. Gibson for treasurer, but for the three executive committee places these nominations have been made: P. W. Eigner, E. E. Denniston and one representative each from the

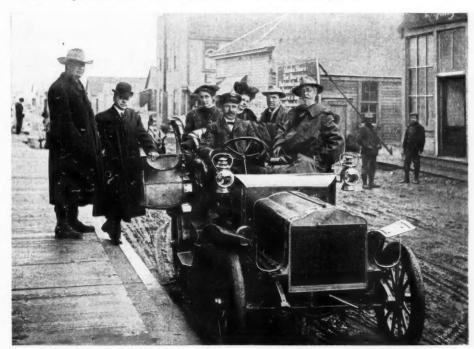
George N. Pierce Co., the Centaur Motor Co., the Thomas Motor Co., the Brunn Carriage Co., and the O. K. Machine Works.

Cryder Leases Building—Cryder & Co., American representatives of the Leon Bollee Motor Syndicate, have leased the building at the northeast corner of Park avenue and Sixty-third street, New York, for a garage.

Orders Decauvilles—E. S. Partridge, vice president of the Decauville Automobile Co., of New York, returned last week from Paris, where he secured a full line of 1906 Decauvilles for the Madison Square garden show. He attended the Olympia show in London, and brings back with him a full line of new ideas which he secured by looking over the cars on exhibition in the big hall.

Bow to the Law—M. Kirschberger & Co., of New York, manufacturers of acetylene burners, announce that since the courts have recognized the validity of burner patents they control, one prominent English firm which had been one of the chief offenders, has bowed to the law and taken out a license. Kirschberger & Co. started suit in 1900, and carried it to the court of appeals of the state of New York, which sustained the patent. Then injunctions against imitators were secured, a recent decision in Chattanooga, Tenn., granting three injunctions against the infringers.

Foreign Strike Pending—John G. Dale, of Mendel, Dale & Co., New York, comes back from Europe with a story of an impending strike in the automobile factories. "The unions have been growing strong," said Mr. Dale, "and the demand for shorter hours, with bigger wages, has almost reached the breaking point. Not alone the body builders, but the machine hands as well, are preparing for a fight that may be a severe setback to the foreign industry. Most of the makers are rushing the work so as to get as many cars as possible ready for delivery before the first of the year."



GENERAL GREELEY, OF THE UNITED STATES SIGNAL SERVICE, IN THOMAS CAR IN ALASKA



# Reduced Railroad Rates

to all members of the AMERICAN MOTOR LEAGUE who travel

# to the City of New York

to attend the meeting of the A. M. L.—to which all automobilists are invited—beginning Monday, January 15, and ending Saturday, January 20, both dates inclusive. As this is the

# Week of the Automobile Shows

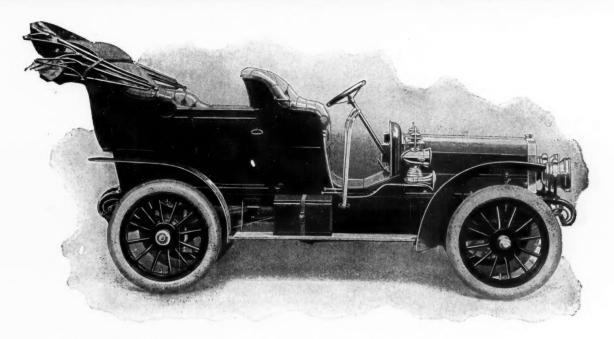
our members will have an opportunity of taking part in convention work and of enjoying the gala week at the same time.

Important Notice—This reduced rate benefit is for league members only. Persons wishing to join the league and to receive this benefit should immediately send names and addresses—plainly written—with 1 year's dues—\$2 for each applicant. The railroad associations will not grant reduced rates in aid of an automobile show or any other purely commercial enterprise. They will recognize only those certificates which are held by league members.

Each member who comes to these meetings should bring his membership ticket. This will save the trouble and delay of searching membership records. Every expired membership should be renewed. Full printed information will be sent on request. Address

## AMERICAN MOTOR LEAGUE

Vanderbilt Building, New York, N. Y.



### MODEL K DELIVERY DATES

The first new Winton, Model K, was delivered to its purchaser, Mr. A. L. Stark, of Elyria, O., Sept. 30, 1905more than two months ago.

Since then we have made regular deliveries, and we shall continue to make them for six months more.

But that doesn't mean that we can deliver a Model K to every purchaser on the exact minute he wants itunless he speaks QUICK.

Yes, the Winton manufacturing facilities are the biggest and greatest on earth, and that ought to mean prompt deliveries always.

But don't forget that the new Winton Model K 's also the biggest and best automobile proposition on the market, and that automobile buyers know it.

They know that it is the highest grade car at the most reasonable price—the most actual value for the money. All the automobile makers have now announced their 1906 models, and among them all there isn't one in Model K's class. No other \$2,500 car touches its merit. And every car said to be about as good sells at from \$3,500 to \$5,000.

What is the result?

Well, the American public knows a good thing when it sees one. And Model K orders are voluminous.

The Winton Transcontinental Exposition was an order-winning success. And dealers all over the country are busy booking additional orders.

But, instead of working our factory day and night in order to get all the money we can make;

Instead of rushing work through, which would mean quantity, but not quality, We have decided to manufacture Model K in the most careful and painstaking manner.

You can figure for yourself that big orders and critically careful manufacture mean

#### ENTIRE OUTPUT SOON SOLD.

Consequently, we earnestly advise our friends-and every lover of a good motor car is our friend-not to wait a minute.

Place your order now and be on the safe side.

We can arrange now to give you a delivery date that will satisfy you. But we cannot promise to do so if you delay.

Winton Model K, 30 H. P., \$2,500, f. o. b. Cleveland. Compare it with any car on the market selling at \$3,500 and upwards.

### THE WINTON MOTOR CARRIAGE CO.

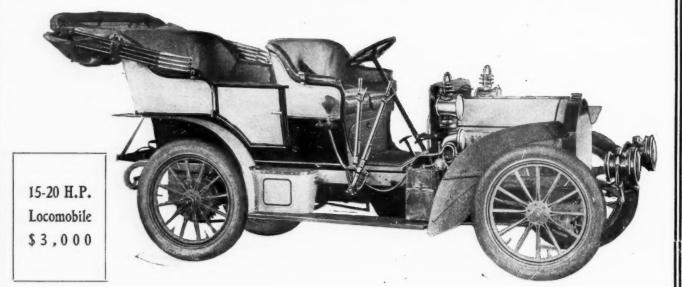
CLEVELAND, O. Member A. L. A. M. U. S. A.

Catalog No. 2 is ready

# LOCOMODILE.

#### "EASILY THE BEST BUILT CAR IN AMERICA"

15-20 H. P., \$3,000, 30-35 H. P., \$5,000, both with complete touring equipment



#### Locomobile 15-20 H. P.

PRICE—\$3,000 ready for touring.

EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.

BODY—Double side entrance, seating five; extra wide doors; fitted with top irons; color and striping optional.

MOTOR—Four cylinder, 3¾ inch bore, 4½ inch stroke.

CAM SHAFTS—Hardened forgings; all cams integral.

CRANK SHAFT—Machined from one solid forging.

LUBRICATOR—Large, mechanical lubricator.

CARBURETOR—Automatic, with balanced throttle valve.

GOVERNOR—Centrifugal type, prompt and positive in action.

uon.

IGNITION—Make-and-break, with iridium contacts.

MAGNETO—Low tension, our own design and manufacture.

ALUMINUM PAN—Placed underneath the machinery.

FRONT FENDERS—Have inner wings extending to bonnet.

CLUTCH—Cone type, with ample surface.

TRANSMISSION—Three forward speeds and reverse.

DRIVE—Double side chains.

DRIVE—Double side chains.

DOUBLE UNIVERSAL JOINT—Between clutch and trans-RUNNING BRAKE-Large and powerful, metal to metal

EMERGENCY BRAKES-Internal expansion type, metal to

metal.

BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke,

AXLES—"I" section hand welded axles,

RUNNING BOARDS—Rubber covered and brass bound.

TIRES—32x4 inches on all four wheels.

WHEEL BASE—93 inches.

CONTROL—Gas and spark levers on steering wheel.

#### TYPE "H" Locomobile 30-35 H.P.

PRICE—\$5,000 ready for touring.
EQUIPMEN'T—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five to seven; extra wide doors; fitted with top irons; color and striping op-

wide doors; litted with the wide doors, and the tional.

MOTOR—Four cylinder, 4½ inch bore, 5½ inch stroke. CAM SHAFTS—Hardened forgings; all cams integral. CRANK SHAFT—Machined from one solid forging. LUBRICATOR—Large, mechanical lubricator. CARBURETOR—Automatic, with balanced throttle values of contributed type. prompt and positive in with balanced throttle valve.

GOVERNOR-Centrifugal type, prompt and positive in ac-IGNITION-Make-and-break, with iridium contacts

MAGNETO—Low tension, our own design and manufacture. ALUMINUM PAN—Is placed underneath the machinery, FRONT FENDERS—Have inner wings extending to bonnet. CLUTCH—Cone type, with ample surface. TRANSMISSION—Three forward speeds and reverse. DRIVE—Double side chains.

DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal

EMERGENCY BRAKES-Internal expansion type, metal to

EMERGENCY BRAKES—Internal expansion type, metal to metal.

BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.

AXLES—"I" section hand welded axles.

RUNNING BOARDS—Rubber covered and brass bound.

THRES—24x44½ inches.

WHEEL BASE—106 inches.

CONTROL-Spark and gas levers on steering wheel.

### The Locomobile Company of America, Bridgeport, Conn.

NEW YORK, 76th St. and Broadway. PHILADELPHIA, 249 N. Broad St.

Member Association Licensed Automobile Manufacturers.

BOSTON, 15 Berkeley St. CHICAGO, 1354 Michigan Ave.

### "The Motor Car of the Future"

That Franklin slogan is not an idle phrase, but a statement full of life and meaning.

It is backed by those telling facts which alone can give vitality to any claim.

The first Franklin four years ago had four air-cooled cylinders, and was built for power, lightness and strength, without regard to cost.

It was the first 4-cylinder car built in America—the first successful air-cooled car

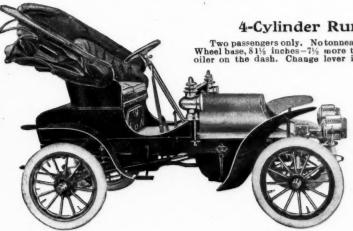
**Franklin** engineers were the first to perfect throttle control; the first to adopt the automatic carbureter in a four-cylinder car; the first to perfect it; the first to use automatic lubrication; the positive fan and the single intake trunk (which foreigners are now copying); the first to make and use a successful auxiliary exhaust, flexibleframe cars, the round hood and full elliptical springs without reaches.

Today the majority of manufacturers are coming around to four cylinders. Many have adopted air-cooling; many more wish they had; and all are trying to build lighter, stronger, and with better springs.

They are beginning to see —"as through a glass, darkly,"—what is plain as daylight to most thoughtful minds; that heavily constructed, complicated, cumbersome cars are not suited to American ideas nor American roads, to say nothing of American purses.

Franklin principles—multi-cylinder, air-cooled motors, light weight and the highest grade most durable construction—have proven themselves the best foundation on which to build an enduring standard type of American motor car—"The Motor Car of the Future.'

And the far-advanced design and detail perfection of this season's Franklins will make them not one-year cars, but favorite and standard cars for many years to come.



#### Type E

#### 4-Cylinder Runabout or Gentleman's Roadster

Two passengers only. Notonnean can be attached. 12 "Franklin horse-power." Air-cooled engine. neel base, 81½ inches - 1½ more than last year. Roomier, more graceful, easier riding. Force-feed er on the dash. Change lever inside the car and forward. Stecially convenient when top is on. 1.100 pounds

One combination ironing which will accommodate canopy, cape or victoria top and glass front. 40 miles an hour. \$1,400. F. O. B. factory.

Full head- and tail-light equipment.

This is really the most economical of all runabouts. Its construction and the materials put into it equal those of any high-priced touring car. It costs 50 per cent per pound more to build than any cars except Franklins; and it gives enduring service and satisfaction at the smallest possible expense.

White a millionaire can ask nothing abler, handsomer or more luxarious; the average business or professional man, physician, salesman, superintendent or suburbanite can find no better value,

Type D

The finest, speediest, 4-cylinder Touring Car.

Type G

Type H

The new light Touring Car. The new 6-cylinder top-notch flyer.

We exhibit in New York at Madison Square Garden, January 13-20, 1906

H. H. FRANKLIN MFG. CO., Syracuse, N. Y. M. A. L. A. M.

### he Motor Car of the Future



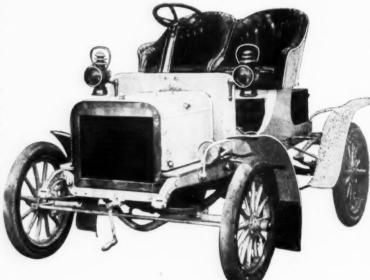
### One of our Five 1906 Models

No car at any price surpasses this magnificent

### Runabout

in style, up-to-dateness or smartness in appearance. It is as carefully designed as any \$3000 or \$4000 car in the world, and because of its remarkable beauty attracts at first sight, the lasting admiration of all who see it.

\$750



Model 2B. 2-cylinder, vertical motor, mounted in front.

Write for 1906 catalogue—the handsomest ever issued.

Has ample power for every condition of roads, climbs hills with perfect ease and has proved itself in every particular a car of rare value. Its hill-climbing abilities are absolutely dependable.

Our 1906 line includes this Runabout, a \$1500 Touring Car, a Commercial line and two other models yet to be announced.

MITCHELL MOTOR CAR COMPANY, RACINE, WIS.

Member American Motor Car Manufacturers' Association



### SEND FOR THIS BOOKLET

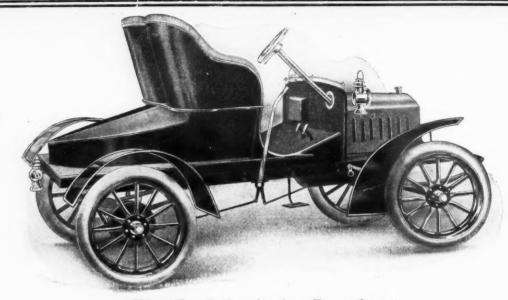
of Peerless 1906 Information, if you intend to buy a 1906 car—or if you are interested in automobiles—for it contains one of the most complete mechanical descriptions of an automobile ever printed. It not only tells just what are the famous Peerless mechanical principles, but it also explains why we have found them best.

A postal will bring it-Send today

### THE PEERLESS MOTOR CAR CO.

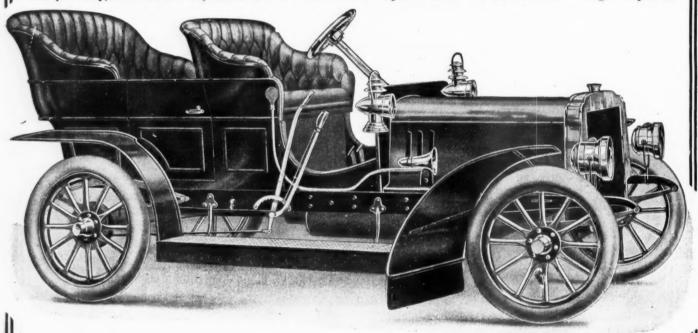
802 Quincy Street, Cleveland, Ohio

Member A, L. A. M.



#### The Ford 4-cylinder Runabout

This car-Model N - is the biggest revelation yet made in automobile construction. A car of this type for less than \$500.00 seemed an impossibility, but here it is. 4 cylinders. 15 H. P. Direct drive. Speed 40 miles. 78-inch wheel base. Welght 700 pounds.



#### Ford Model K

6 cylinders-40 H. P., 4 to 50 miles per hour on high gear. Perfected magneto ignition, mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2000 pounds. Price \$2500.

NO FURTHER PARTICULARS WILL BE GIVEN UNTIL THESE CARS ARE SHOWN FOR THE FIRST TIME AT THE AUTOMOBILE CLUB OF AMERICA'S SHOW AT THE 69th REGIMENT ARMORY, NEW YORK, JANUARY 13th to 20th.

### Deliveries for Models N and K Will Not Be Made Before March

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

### Ford Motor Company, Detroit, Member American Motor Car Man'f's Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Wichigan Ave., Chicago; Cieveland and Kansas City.: : : : Canadian Trade Supplied by Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

### Stevens-Duryea advertising has received

considerable favorable comment of late. It attracts attention because it's decidedly Unusual. It's Unusual because it contains nothing but definite statements of things that either are or are not so. This kind of advertising is a pretty dangerous kind to put out if a manufacturer isn't prepared to deliver the goods. It is the finest possible sort to use if he IS.

WHEN IT'S ALL BOILED DOWN, THE AVERAGE MAN WANTS TO BUY THAT CAR WHICH WILL RETURN HIM THE MOST FUN AND ENJOYMENT PER DOLLAR EXPENSE, AND THAT WILL LEAVE HIM AT THE END OF THE YEAR WITH THE GREATEST NUMBER OF PLEASANT RECOLLECTIONS AND THE FEWEST UNPLEASANT. The man who analyzes our Ads carefully, will find that this is what we talk about in every one of them, although we may not put it in just those words. But talk is cheap; the question is, Do we deliver the goods? Anyone with a poetical turn can write Ads with a nice swing to them and hypnotize the purchaser, but after the car is sold; after the purchaser has come out of his trance and has had time to get the package thoroughly unwrapped, does he find that everything is there, just as promised, or does he find that the Mechanical Department had failed to keep up with the pace set by the Literary End of the House?

During the past season we committed ourselves more times to more promises of good things; to more statements and stronger statements that would trip us HARD, if we failed to make good, than any other manufacturer. On account of these statements, and on account of the special features of design that found their first expression for the first time in the Stevens Duryea, it was considered by everybody to be more than probable that we would fall down, so the Stevens Duryea was certainly in the glare of the limelight this past season, if ever a car was, and if we had failed to make good in even the most trivial detail, every one would know the place and date where we fell.

But let's see: Besides the Stevens Duryea there were some fifty different sizes and makes of four-cylinder cars put on the market at the beginning of 1905. All of them started out with fairer prospects than the Stevens Duryea, because people always look askance at anything that's "different." But ten short months later call the roll and see how many are left. How many have proven so successful and so satisfactory in every way that they can be continued for 1906 without change? How many failed in so many ways to make good that they have been entirely abandoned for 1906? How many more are in the hands of the Beauty Doctor, getting a new face? More Power, Wider Doors, Easier Springs, Better Axles that are guaranteed not to break "this time," etc.

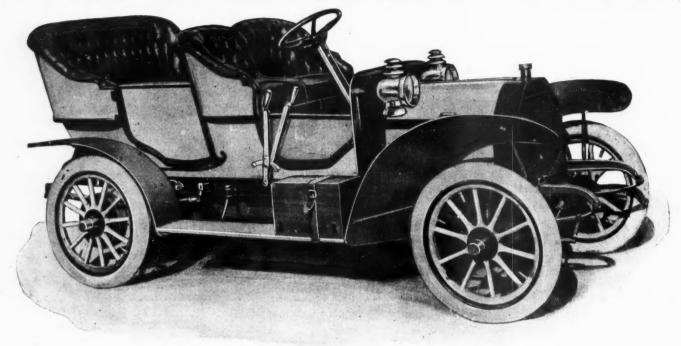
Now the true test of what a car is, IS NOT WHAT THE MAKERS AND SELLERS OF IT HAVE TO SAY ABOUT IT AT THE BEGINNING OF THE YEAR, but WHAT THE PURCHASERS HAVE TO SAY FOR OR AGAINST IT AT THE END OF THE YEAR. How many of them want to sell their purchase at the end of the year, either because they have had too much trouble and too little pleasure with it, or because they have found something they like better? How many like it so well that they don't want to change? The place to look for this information is in the second-hand columns of the papers and among the various agents who might perchance have induced a Stevens Duryea owner to "trade." If there are more of the public wanting to buy second-hand Stevens Duryea than there are to sell, their value will be high, and vice versa. You will find, on looking it up, that, although there are over 350, Model R, Stevens Duryea in use (don't confuse the Model R with the Model L that we have been making for the last five years), yet they are about the hardest car of any to secure, second hand, and their value second hand shows less drop from their cost new, of any. All of which is just another way of saying that the Stevens Duryea has Delivered the Goods.

### The J. Stevens Arms and Tool Co.

705 Main St., Chicopee Falls, Mass.

Members A. L. A. M.

### OLDSMOBILE



Two-cylinder Two-stroke Cycle Light Touring Car. Model "L" Price \$1250

We have already announced in a general way our two-cylinder, two-stroke cycle car. Following we give a detailed description of this most attractive car—the smart appearance and "get up and get" qualities of which make it irresistible, once tried.

Model "L" has a marked individuality, though it approaches in general appearance the lines of several foreign machines very popular in America. The front axle is brought well forward and the rear wheels back, giving a very long wheel base and adding to the easy riding qualities of the car. The tonneau is so constructed that it is easily removable, and the "Beadle back" luggage compartment is built for utility as well as for appearance. When thus equipped it becomes the most attractive of two-passenger or runabout outfits. The standard color will be pearl gray with black trimmings and red running gear.

MOTOR. The motor is two-cylinder, two-stroke cycle, vertical water cooled, placed under bonnet at front; cylinders 5-inch bore, 5-inch stroke, rating 20 to 24 actual horsepower, giving ample road efficiency. The cranks set at 180 degrees are counterweighted, reducing vibration to the minimum. Lubrication is by the Hill Precision oiler, bolted to brackets upon cylinders, and driven by eccentric. Pistons lubricated on both sides. Crank pins are oiled through middle main bearings. This system absolutely prevents smoky exhaust.

The cylinders and piston are of best gray iron, made in our own foundry. The crank case is of aluminum, the lower half being removable without disturbing bearings. The crank shaft is drop-forged and subjected to a special heat treatment, finished all over and perfectly balanced. The brakes are of generous proportions and consist of bronze one-half shells with babbitt lining. Thus any bearing may be replaced from stock without trouble or rebabbitting.

Cooling is by water circulated by gear pump. Radiator of flat tube construction. Ignition, one storage cell, one set of six dry cells. Spark coil on dash. Commutator bevel gear driven. Spark plugs are set at an angle to prevent fouling with oil.

TRANSMISSION. The transmission is sliding gear. three speeds forward and one reverse. The gears are of

### OLDSMOBILE

special high carbon stock tempered and hardened. The control is of the selective type operated by a single lever which cannot be thrown into reverse until prawl has been lifted, a precaution against accidental jamming of gears. The clutch cone sets into fly wheel, all strains self-contained. The clutch is thrown out by foot lever and also by emergency brake lever. The transmission case is of aluminum, the lower half being removable at top. Transmission is splash lubricated from case through pockets packed with waste and screens. This precaution is taken to prevent steel chips getting in bearings. The transmission drive is through 1½ inch shaft and Spicer dust-proof universal joints to the rear axle.

AXLES. The front axles are of our own special design, 2-inch tubing, ¼ inch wall. Steering connections have especially large bearings, all of which are equipped with "T" handled dope cups and protected by leather dust caps. The steering cross connections and steering link are adjustable, and the wheels may thus be lined up at any time. The axle is dropped in center to protect fly wheel and other parts beneath car. The rear axle is equipped with Timken Roller Bearings throughout and with brakes, etc., of our own special design.

BEVEL GEAR DRIVE. The car has bevel gear drive, the ratio of the gear being 3 to 1 for standard equipment.

BRAKES. The brakes are of the internal expanding type, with toggle set-up, either camel's hair or metal lining being used, depending upon the section of the country to which car is shipped. The brake drum is of pressed steel, 12 inches in diameter, 2-inch face. The brake on the cardan shaft at rear of transmission is operated by foot pedal, while the emergency brake upon the rear wheels is operated by hand lever. The application of emergency brake throws out clutch, disconnecting transmission from motor.

SPRINGS. The springs are made of the very best

stock obtainable, and are of the half elliptic type. The front springs are 36 inches by 2 inches and the rear 48 inches by 2 inches. The long spring hangers at front and rear permit lengthened wheel base.

FRAMES. The frames are of pressed steel channel section. A sheet steel plater riveted between side and sub-frames gives pronounced bracing effect. The dust pan attached to sub-member and extending from front cross member to the rear of transmission is removable. This dust pan makes inside of car absolutely dust, mud and water proof. Both the engine and transmission are aligned upon sub-frame and all working parts may be removed without disturbing hanging of crank and transmission cases.

CARBURATION. The carbureter is built for us after our own design, and is very effective and economical of fuel. The gasoline tank has 15 gallons' capacity.

CONTROL. The steering is accomplished through a worm and nut mechanism. The nut is long and has a wearing surface babbitted so that same may be replaced at any time. The steering gear case is securely bolted between sub-frame and side member. The spark and throttle levers are placed upon steering post just beneath and at the right of 16-inch oval rim steering wheel.

MISCELLANEOUS POINTS. Wheel base 102 inches, the tread standard 55 inches, though 52 inches and 58 inches are furnished on special order. Wheels 30 inches, 10 spokes front, 12 spokes rear. Tires, 30x3½. The muffler is arranged longitudinally beneath the car and entire construction is so enclosed that very little dust is disturbed by the passing of the car. Running board, mud guard irons, instead of being riveted on, are drawn into taper sockets upon side of frame and are easily removable. The lamp brackets are adjustable for different widths of lamps. We furnish tubular horn, two acetylene lamps, a generator and three oil lamps with this car.

Further specifications sent on request.

### OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

## OLDS MOTOR WORKS LANSING, MICH. Kindly send me information regarding cars checked. I am interested. Model B.... Model S.... Passenger Traffic Cars.... Name

CATALOGUE COUPON

CALENDAR COUPON

### OLDS MOTOR WORKS

Enclosed find 10 cents, for which send your Art
Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name \_\_\_\_\_

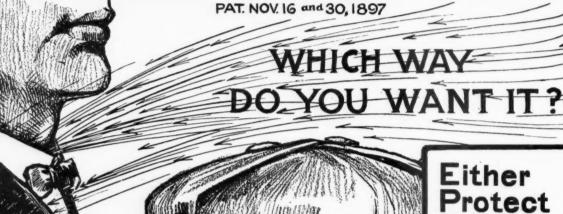
MOTOR TALK COUPON

#### OLDS MOTOR WORKS LANSING, MICH.

Enclosed find 25 cents, for which have MOTOR
TALK, a magazine devoted to automobiling, sent to
me for 1 year.

13

Name \_\_\_\_\_



## NOV. 16 and 30. An ideal garment for men,

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler-or

Your

stay indoors.

**Throat** 

is a perfect throat and chest protector.

Comes with or without ear tabs as preferred.

Especially adaptable for winter motoring.

As easy to put on as your hat.

women and children. , Most dealers car-ry Way's Muffler THIS IS THE WAY in stock. YOU WANT IT

If yours don't, write to us direct.

The Way Muffler Co.

MANUFACTURERS

Cor. 23d and Arch Streets J. HOWARD WAY, Prop.

Chicago, 920 Medinah Temple New York, 43 Leonard St.
Pittsburg, 9th and Liberty Sts. Cincinnati, 21 W. 3rd St.
London, Canada, Hiscox Bldg.



### 1906 MODEL POPE TOLEDO TYPE XII 35-40

Price, \$3500

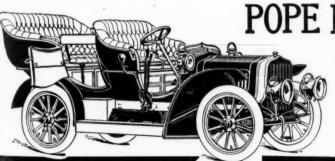
More Speed Room Strength

Less Weight
Expense
Trouble
Complication

The fastest and most powerful touring car in the world. Type XII, Pope Toledo marks the greatest forward step yet attained in automobile development. Motor has only  $10\frac{8}{10}$  pounds of engine weight per H. P. and only 54 pounds of total weight per H. P. and this too, without in any way sacrificing strength and wearing parts. The Pope Toledo Carbureter is developed to such a point of fineness, that it is self adjusting to all conditions of speed, so that with the Spark and Throttle alone, and always on the high gear, you can drive a Pope Toledo anywhere, taking all ordinary hills without rushing them and without shifting gears. Transmission: sliding gear three speeds forward and reverse, and made of the best steel obtainable. By its use we are enabled to produce not only the LIGHTEST but the STRONGEST and most efficient Transmission ever placed in any automobile. Frame: all steel of few parts, light, flexible and strong, making the car very easy to ride in. The Pope Toledo system of brakes is incomparable; both foot and emergency brake act on the hubs of the rear wheels; are very efficient and easily adjusted. Design: entirely new and original. Double side entrance, very large and roomy TON-NEAU, specially easy of access. Car comfortably seats seven people.

Order now for early delivery. Price, \$3500

Be sure the name "POPE" is on your automobile.



POPE MOTOR CAR COMPANY

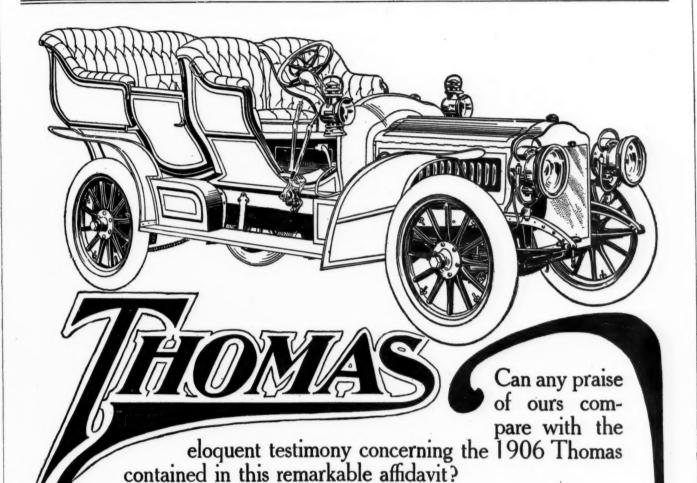
TOLEDO, OHIO

New York City: 1733 Broadway Boston, Mass.: 223 Columbus Ave. Washington, D. C.: 819 Fourteenth St.

A. L. A. M.



"Every stock car guaranteed to show sixty miles an hour before leaving the shops." E. R. THOMAS.



Buffalo, New York, November 10, 1905.

This is to Certify, That we, the undersigned, this day rode at the rate of 60 miles per hour with five passengers over average roads. maintaining a speed continuously in regular stock model 1906 Thomas touring car, and went up a 14 per cent grade with five people on the high speed and on very bad roads increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation, and the clutch is extraordinarily sweet and effective.

This is the only American built stock car that within our knowledge has made 60 miles per hour on ordinary roads, even without passengers.

(Signed) AUBREY H. MARTIN, Philadelphia, Pa.

C. A. COEY, Chicago, Ill.

F. W. DART. Hartford, Conn.

C. S. HENSHAW, Boston, Mass.

F. B. HARPER, Beverley. Mass.

A. M. SPEAR, JR., Portland, Me.

A. S. ROBINSON, New York.

RAYNER GOODWIN, Brooklyn, N. Y.

STATE OF NEW YORK,

COUNTY OF ERIE.

Sworn and subscribed to before me this 10th day of November, 1905.

ARCHIE I. DRAKE, Notary Public.

THE E. R. THOMAS COMPANY 1417 Niagara Street Buffalo, N. Y.

Member Association Licensed Automobile Manufacturers.

# ANNOUNCEMENT CORBIN CARS FOR 1906

### Model E, Light Touring Car, Price \$2000

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs of special design and great flexibility. Wheels  $32 \times 3\frac{1}{2}$  inches. Weight 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools constitute the equipment.

### Model G, High Powered Runabout, Price \$1800

The specifications of this model de luxe two passenger car are identical with the Model E with the exception of wheel base, 93 inches. Body latest French type for two passengers, divided front seats. Long, graceful tail box. The metal parts are lightened wherever compatible with safety. Speed 50 miles per hour.

### Annular Ball Bearings Are Employed Throughout

Agencies in certain desirable territory are still open. Representative dealers are requested to communicate with us promptly to insure early delivery of cars.

### **Corbin Motor Vehicle Corporation**

MAKERS OF CORBIN AIR COOLED MOTOR CARS

NEW BRITAIN, CONN.

<sup>4</sup> West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati



MOTOR—4-Cylinder—26-28-H.P. FRONT AXLE—Solid-forged.

DRIVE-Shaft Bevel Gear.

FRAME—Pressed Steel.

WHEELS $-32 \times 4$ .

WHEEL BASE-101 inches.

TRANSMISSION—Sliding Gear.

GROUND PARTS - All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.

EQUIPMENT-Five Lamps, Horn, Tools and Storage Battery.

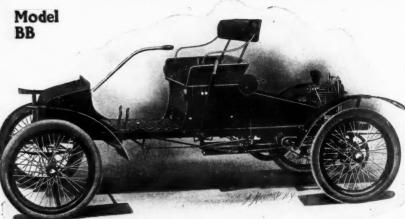
We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at \$1,100—and a Runabout 12-H.P. at \$800.

Write us for complete details and agency proposition.

C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

# Buck1906 FRICTION-DRIVE Board

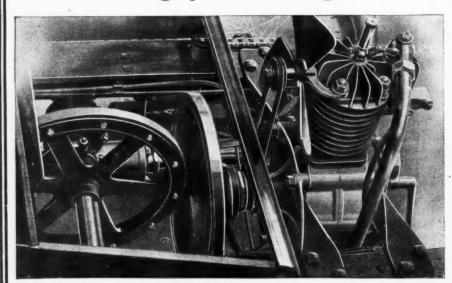
Air-Cooled
Four Horse-Power
10-inch Clearance
Speed, 30 Miles
an Hour
Climbs 40 per
cent Grade
Weight, 600 lbs.



Starts Easily
NumberlessSpeeds
Forward and
Reverse
Fan on Engine
Oils From Seat
Elliptic Springs
Semi-Rigid Frame

### A Remarkable Motor Car for \$400

As noiseless and free from vibration as a 4-cylinder touring car. Will climb grades and drive through sand and mud that no other motor car of any horse-power can negotiate. Its maximum driving ratio is 40 to 1. A high-powered touring car is but 18 to 1.



DRIVING MECHANISM

Responsible Dealers desired in unassigned territory Write for Catalogue and Agency Proposition

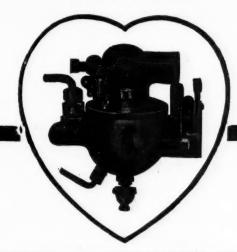
### Waltham Manufacturing Company General Offices and Factory - WALTHAM, MASS., U. S.

Member Association Licensed Automobile Manufacturers.

GASOLINE CONSUMPTION
30 Miles to One Gallon
OIL CONSUMPTION
90 Miles to One Pint
OPERATING COST
Half a Cent Per Mile



REAR VIEW 1906 BUCKBOARD



THE HEART OF THE AUTOMOBILE

### The Schebler Carbureter Standard of the World

A CARBURETER, or anything else, to "MAKE GOOD" must be MADE GOOD

### It's the "Making Good" that Counts

During the 100-mile record drive of a National 1906 Stock Car, at Indianapolis, Nov. 4, 1905, all world's records were surpassed by several minutes. That National Car was equipped with a Schebler Carbureter. With never a miss, skip or falter, mile after mile was covered within the fraction of a second of even time. The Schebler Carbureter "made good" and that is what counts most. Just run your eye over the times made for each mile:

| 1   | . 1:19 2-5 111:07 3-5 211:07 4-5 311:07 4-5 41 | 11:07 4-551    | 1:07 4-5 611:08 3-5 711:07 4-5 811:06 3-5 911:07                            |
|-----|--|----------------|---|
| 2   | . 1:08 3-5 121:07 1-5 221:07 4-5 321:08 42     | 21:07 4-5 52   | 1:08 1-5 621:08 2-5 721:07 4-5 821:07 1-5 921:07                            |
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|     |  |                | 1:08 1-5 641:07 3-5 741:07 4-5 841:14 3-5 941:06 2-5                        |
|     |  |                | $1:08\ 3-5\  \ 651:08\ 1-5\  \ 751:08\ 1-5\  \ 851:08\ 4-5\  \ 951:06\ 4-5$ |
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|     |  |                | 1:07 4-5 691:08 791:06 2-5 891:08 4-5 991:07 1-5                            |
| 10. | 1:07 3-5 201:08 1-5 301:08    401:07 3-5 50    | 1 1 :07 4-5 30 | 1:08.3-5[701:08.1-5]801:06.2-5[901:07]                                      |

and then be convinced that the work of a Carbureter that can and does accomplish such results is indeed "The Heart of the Automobile."

### WHEELER & SCHEBLER, Mfrs.

INDIANAPOLIS, IND., U.S. A.

P. J. Dasey, Factory Representative, 431 Wabash Ave., Chicago, Ill.

#### Agencies in all the Principal Cities of the World

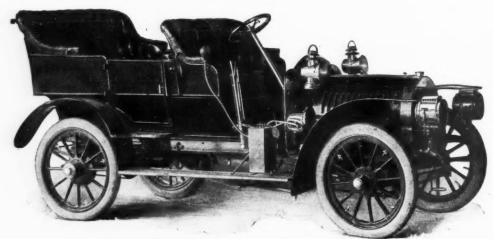
| E. J. Edmond44th St. a           | nd 6th Ave., New York City  |
|----------------------------------|-----------------------------|
| Excelsior Supply Co              | Chicago, Ill.               |
| Automobile Supply Co             |                             |
| Beckley-Ralston Co               | Chicago, Ill.               |
| E. B. Belcher                    | 26 Green St., Malden, Mass. |
| Jos. Brassard                    |                             |
| Ellsworth Foundry & Machine Shop |                             |
| National Electric Supply Co      | Washington, D. C.           |
| Smith Electrical Engineering Co  |                             |
| The Wallace Bros. Co             |                             |
| N. Philadelphia Auto Station     |                             |

| F. C. Bowlus  |
|---|
| Chanslor & Lyon Motor Supply Co   |
| Los Angeles Auto Co   |
| McCullock & Boswell   |
| Canada Cycle & Motor Co Toronto Junction, Can.                                  |
| Schuman Carriage Co   |
| Turnbull & JonesDunedin, N. Z. Geo. Neill & Co38 Fenchurch St., London, England |
| Geo. Nem & Co 38 Fenchurch St., London, England                                 |

# THE 1906 MODEL B Rainier

### "THE PULLMAN OF AUTOMOBILES"

has arrived and is now on exhibition at our showrooms. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. Equal to any car, built in any country at any price. Make and break spark. Sims-Bosch Magneto. Bevel gear drive. Continental Tires. Aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, \$4,000.

Do you realize fully the great superiority of the "make and break" over the jump spark? Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method? Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway and 50th Street, New York

BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY

Good Agents Wan'ed in Unassigned Territory



- The reeds are what stick most horn makers. Successful metal mixtures and tempering processes for horn reeds are the secrets of a very few men. The non-corrosive, vibratory metal reeds in genuine Volier Horns, which are unaffected by weather and which keep their tone indefinitely, are a feature which alone make Volier Horns superior to any other horns offered in America; but, in addition, there is the matter of
- The bulbs. In ordinary horns the bulbs are steam cured. They split and crack from use and vibration. In Volier Horns the bulbs are chemically cured another secret process. The chemical curing makes Volier bulbs soft, pliable and tough. Volier bulbs do not split or crack.
- ¶ Horn fashions are set by the Volier, which we exclusively import from France. Witness the "Dragon" horn craze this season, founded on the Volier "Dragon."
- We can now give you illustrations and quotations on the 1906 Volier styles.



The Post & Lester Co.

Hartford, Conrect cut

SOLE AMERICAN DISTRIBUTORS

### CADILLAC UTILITY

The single-cylinder Cadillac will climb any hill that any automobile will climb.

The single-cylinder Cadillac will travel as fast as anybody ought to ride.

The single-cylinder Cadillac will travel any road that any automobile will travel.

### The single-cylinder Cadillac

Costs less to operate
Costs less to maintain
Requires less attention
than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined and won for them the unquestioned distinction of

### America's Leading Motor Cars

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JAN. 13-20,1906

### CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

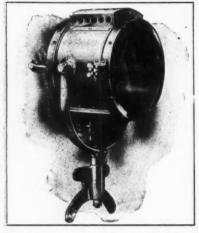
Member Association Licensed Automobile Manufacturers.

### WHAT WOULD YOU THINK OF A

### Carbureter

which drank a gallon of gasoline in every five miles, and wouldn't stay adjusted? You

wouldn't want it as a gift, would you?



And yet you will buy a search-light with a silver plated reflector, which reflects, maybe, 10 percent of the light from the flame, and reflects next to nothing unless you

keep constantly polishing it. And you don't even polish it, because it is too much trouble. You let it tarnish, and at night you take your chances.

Is this common sense?

The Rushmore Navy Standard Searchlight has a lens mirror, scientifically ground to throw the light straight forward. It never needs polishing. Having a shorter focus than any other, it is closest to the flame and utilizes the maximum percentage of light.

For the actual illumination given, it is the cheapest lamp made.

Sent on ten days' free trial.

Ø

### Rushmore Dynamo Works

PLAINFIELD, N. J.

### Haynes

### Exclusive Features that Appeal to Discriminating Buyers

Model "R." Four-Cylinder Touring Car

Roller bearing vertical engines. Cylinders 51/8"x6"; 50 H. P. Cast separately. Sliding gear transmission with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carbureter, which assures perfect mixture in all temperatures and under all climatic conditions. Master Clutch that has no leather surfaces to wear. Takes hold easily and gradually without jerking. Shaft drive. Exclusive universal joints that do away with wear on pins, run in housing packed with grease. One piece nickel steel rear axle with beveled sprocket gear, driven by roller pinion; thrust eliminated, friction reduced, noiseless; all in a bath of oil. Roller bearings throughout. 108-inch wheel base. 50-inch tonneau with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight 3,750 pounds. Price \$3,500, F. O. B. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906—HAYNES—roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10% loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of preëminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears, the transmission device never allows the momentum of the fast-moving car to be thrown against the power of the engine with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft-driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Grey curled hair and hand-buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are some reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our catalogue Number 11, sent prepaid upon request.

"The Car that the Repair Man Seldom Sees"

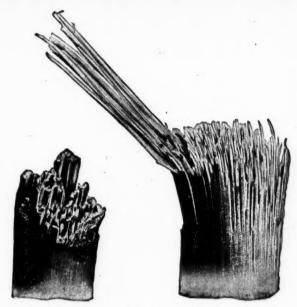
### The Haynes Automobile Co.

KOKOMO, INDIANA

CHICAGO: 1421 Michigan Ave.

NEW YORK: 1715 Breadway

Members A. L. A. M.



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

### Talks on Wheel Making

A bursted tire is robbed of its danger if the car is equipped with "Imperial" wheels.

Don't lull yourself into a sense of false security by imagining that all wheels rank alike. Read what the Horseless Age has to say on the subject:

> "As an illustration of what can be accomplished by suitably disposing material, no better example can be found than the wood wheels fitted to motor cars. No part of the car has its material subjected to stresses under a greater variety of conditions. True, there are wheels which are of no value; wheels, in fact, which have no factor of safety and are ready to collapse at the first turn; but they are not the wheels one ought to find on a car.'

Collapse is usually traceable to two causes-defective material or unsound construction. And sometimes to both.

> The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

### IMPERIAL WHEEL COMPANY

FLINT, MICH.

Selfing Agent

HAYDEN EAMES Cleveland, Ohio

### The Trouble-Proof GENERATOR

### that describes the RUSHMORE

In the Patented Shaking Grate, Regulating Chamber, and Safety Vent it solves the problem of a perfectly automatic portable generator.

> It gives a gas supply as steady as that in your house.

> It maintains the pressure undiminished till the carbide is wholly consumed.

> It stops generating when you turn out the lights.

It preserves the unused carbide indefinitely without waste.

And it does all this automotically, without adjustments, and with no attention save to empty out the dry lime dust and refill with water and carbide -the work of a moment.

Just compare this with the antics of your present generator and then write us for catalog telling why the Rushmore is unique among its kind. Three sizes, holding 11/4 lbs., 21/2 lbs. and 5 lbs. of carbide.

### Rushmore Dynamo Works

Plainfield, N. J.

### An Investigation of Goodrich Tires

Mr. E. Shirts, cashier of the Citizens' State Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year of 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new. His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with Goodrich Tires, 3x30 inches. I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new, with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and found them in perfect condition, not even rim-rusted.

"I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, skewing or skidding. :: ::

### The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1625 Broadway Buffalo, 731 Main St. San Francisco, 392 Mission St. Boston, 161 Columbus Ave. Philadelphia, 909 Arch St.

Cleveland, 416 Erie St. Chicago, 141 Lake St. Detroit, 80 E. Congress St. Denver, 1444 Curtis St. London, E. C., 7 Snow Hill.

### Bargain-Hunting

applied to Motor Cars is a study of human noture.

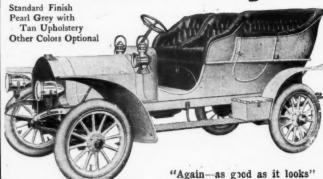
In the purchase of an Automobile, as in everything else, there are two ext emes to which the buyer may go.

First-Rabid Extravogan e, which carries the purchaser to on exorbitont price for a 4-cylinder car.

Second Rank Economy (always the most expensive in the long run). which takes the bargain hunter to a 4 cylinder car at a low and impossible valuation.

-THE-

### Stoddard-Dayton



an honest commercial value between the two extremes.

It is the right car at the right price, with the right kind of Guarantee back of it to insure your protection and absolute satisfaction.

¶ Our 1906 Cotalogue is as instructive as a course of tuition with a correspondence college.

It tells all there is to say and shows all there is to see about the 1906 Stoddard-Dayton line, including Touring Car, Runabout and Limousine.

Write for it. It's Free.

### Dayton Motor Car Co.

DAYTON, OHIO

FIOR FURNITURE

BLAKE CO P 69-73 SUDBURY STREET

Nov. 6.

Jacksen Automobile Co.;

Jackson, Mich.

We are sending you today under separate cover a photograph of a "Jackson" car that that has been run this senson over 10,000 miles by the odometer. We really believe it would pay you to get this into the Trade Journals if the expense is not too much. You wrote us smettime ago that you would have either the Model 'C' or 'D' made with detechable tonneau with fish-tail deck. Have you say yet decided which model you will have in this may! If so, kindly write us the price of machine without the tonneau. Webelieve it would be advisable to have the cheaper car with deschable tonneau.

Yours respectfully,

Per 6. O. Blake

P S. The tires on this car are Diamond detachable. The two is cward ones have never been touched and the two rear tires have been retreated once. This car is owned and driven by Wr. M. H. Bates, Brockton, Mass

THE accompanying letter and picture explain WHY every agent we had on our list for 1905 has contracted for Jacksons for 1906: Why every "Jackson" driver is an advertisement: Why you, if you have the auto fever, should buy the Jackson; ¶ Why the Jackson has the world's record for five miles on a circular track for two-

in the non-stop run from Chicago to St. Paul. THREE MODELS: =

cylinder cars; ¶ Why the Jackson won second

\$1250.00, 20-24 H. P.

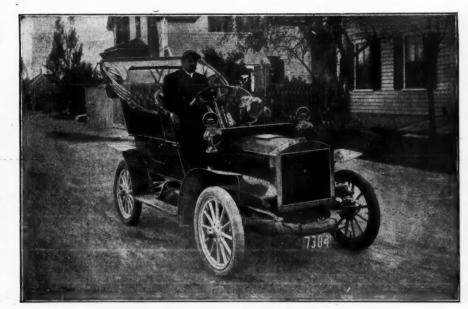
MODEL "D" \$1500.00, 20-24 H. P.

MODEL "G" \$2500.00, 40-45 H. P.

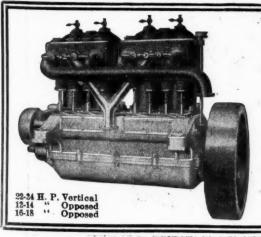
#### OUR AGENTS ARE:

The Jackson Auto Co., Newark, N. J. Eastern distributors.
L. C. Howard, 1655 Broadway, N. Y. Ormond Auto Co., Brooklyn, N. Y. E. P. Blake Co., Boston, Mass. New England distributors.
East Liberty Auto Co., Pittsburg, Pa., 5969 Centre Ave.
Dlamond Motor Car Co., 2121 Broad St., N., Philadelphia, Pa.
E. K. Hauser, 1233 New York Ave., Washington, D. C.
C. R. Dench, Erie, Pa.
Standard Auto Co., 730 Granite Bldg., Rochester, N. Y.
Paxson Motor Car Co., Cleveland, O. Hagmann & Hammerly, Chicago. Ill. Scidler-Miner Auto Co., 2655 Olive St., St. Louis, Mo. Chas. R. Johnson, Coldwater, Mich. Chas. T. Bisch, Springfield, Ill. The Motor Car Co., Minneapolis, Minn. Sloux Falls Auto & Supply Co.,

Minn.
Sioux Falls Auto & Supply Co.,
Sioux Falls, S. D.
The David Bradley Co. of Wisconsin, Fond du Lac, Wis.



JACKSON AUTOMOBILE CO., :: Jackson, Mich.



### "DON'T DELAY" PLACING YOUR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.



16 H. P. Touring Car \$1,450 8 H. P. Tourabout \$780

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made AS GOOD a record. No car AT ANY PRICE did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the SAME car up THREE TIMES.

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things MUST be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

### MAXWELL-BRISCOE MOTOR CO.

Central Western Representative:
A. F. CHASE.

Members of American Motor Car Manufacturers' Assocation.

Agents in Principal Cities.

New York Agents: MAXWELL-BRISCO, INC.

Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

### Compound Doctor's Stanhope

A Doctor Can't Afford To Take Any Chances

### Free from NOISE and VIBRATION

Price, \$1,400.00

12-15 H. P.

The use of any of our models ensures Endurance and Reliability.

Only the very best material obtainable, assembled by the most expert mechanics, enters into its construction.

Chassis is the same as used in our Model Four, Light Touring Car, which carried five people in the New York Motor Club's recent Economy Test and defeated every touring car entered.

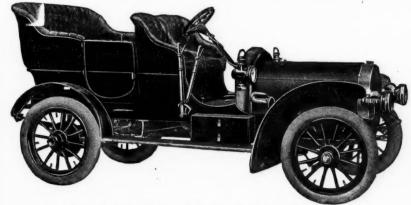
THE E. H. V. CO., Middletown, Conn.



### Mational

### Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16-17, made 1,094 3-16 Miles in 24 Hours, breaking the former World's Record by 78 9-16 miles, and 1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second, breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the Unfailing Reliability of Nationals.



Model D-NATIONAL-One of the same kind fully equipped.

"Watch for the Round Radiator"

Write us for anything else you may want to know.

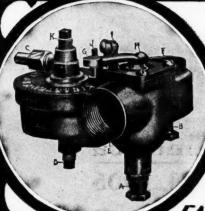
National Motor Vehicle Co.

1006 E, 22d St.
INDIANAPOLIS, IND.

Member American Motor Car Mfrs. Association, Chicago

DISTRIBUTORS:

Raiph Temple Auto Co., 310 Michigan Ave., Chicago Linscott Motor Co., 163 Columbus Ave., Boston Homan & Schultz Co., 38th St. & Broadway, New York Tioga Auto Co., Broad & Tioga Sts., Philadelphia Liberty Auto Co., 138 Beatty St., Pittsburg Nat'l Motor Car Agency, 705 S. Main St., Los Angeles



# KINGSTON & 1906 TYPE-K-AUTOMATIC GARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.

Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.

Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

OVER 31,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

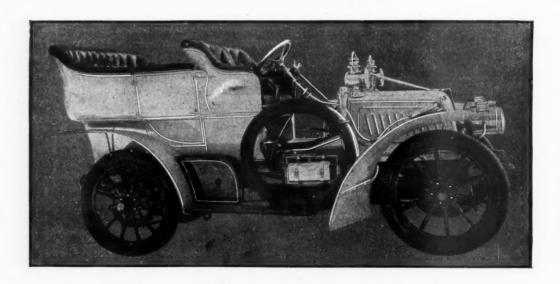


IMPROVED

BYRNE, KINGSTON & CO.

KOKOMO, INDIANA, U. S. A.

### WORTHINGTON AUTOMOBILE 547 Fifth Avenue COMPANY New York City



24 h. p. Berg Touring Car

IMMEDIATE DELIVERY

MEMBERS A. L. A. M.

"The Open Show That Must Be Seen"

### SIXTH ANNUAL AUTOMOBILE CLUB SHOW

of the Automobile Club of America New York City, Jan. 13 to 20, 1906

Sixty=ninth Regiment New Armory
Twenty-sixth Street Near Fourth Avenue

Leading American and Foreign Exhibitors

GASOLINE - STEAM - ELECTRICITY

The Up-to-date Exposition of a Great Industry

### his AUTO TIRE has no BAD HAB

won't come off the rim when run deflated, won the firm when run denated, no tire bolts required to hold it on the rim—and you can take it off or put it back in 30 seconds, using nothing but the hands. And it's a Tire, besides, that's as resilient as a "soft" tire, and will outwear most "hard" tires.

Sounds like a fish story desent it?

Sounds like a fish story, doesn't it? But it's a fact, nevertheless. Barney Oldfield didn't believe it,

either, but he does now.
We showed him—he saw with his own eyes-and now he uses the Goodyear Detachable Auto Tire with the Universal Rim in all his races.

He used this tire at the Boston meet on Sept. 9th, where he made five miles in 4:55 and a mile in :55 1-5—breaking the track record.

You ought to hear Barney's chaffeur sound the praises of the Goodyear Detachable to all who will listen to himhear him tell how reliable it is-how it saves him time, trouble and worry and makes his position easy. He says he never thought it possible before using the Goodyear) to embody all the good points a tire ought to have in one single tire.

We wish you could come with us to the factory or to one of our branch stores. Then you could see in no time for your-

self just why and how these things are You can "see through" it all instantly when the tire is before you.



We'll try, however, to explain just one point, here.

Why the Goodyear Detachable Auto Tire is Durable and Resilient at the same time.

Look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide practically no wear out to it.

Now right underneath this is the remainder of the outer casing (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be.

These two different kinds of rubberthe dense, tough composition, to take the the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The dense rubber and the soft rubber together make a tire that's almost as durable as a solid tire, a tire difficult to puncture yet one which is as resilient as a man could reasonably ask.

Our "Good News Book" tells more about the good points of this trouble-saying tire.

the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY,

Wallace Street, Akron, Ohio

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 39 Frankfort St.; Philadelphia, 1521 Spring St.; Sa., Fr., acisco. Geo. P., Moore & Co., 596 Golden Gate Ave.; Buffalo, 7 19 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

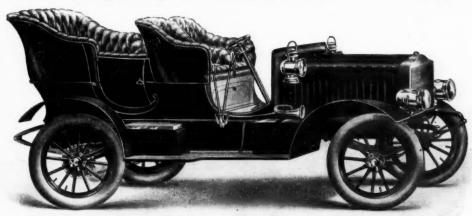
We furnish ALL SIZES of Tires with BAILEY TREADS, if desired

6 Models Ready for Delivery



### The Famous **Friction Drive Car**

It will pay you to investigate the Lambert for two reasons: Ist. Simplicity of Construction 2d. Cost of maintenance



Model 7. 34 H. P. Price, \$2,000

NO COMPLICATED PARTS

We are booking orders on the following models:
Model 8. 34 H. P. Model 8. 34 H. P.
Heavy Touring Car,
Model 7. 34 H. P.
Touring Car
Model 6. 18 H. P.
Touring Car
Model 5. 16 H. P.
Touring Car
Model 4. 16 H. P.
Light Touring Car
Model A. 16 H. P.
Ronabout \$3,000 \$2,000 \$1,500 \$1,200 \$1,050 Runabout \$900

A Gearless Transmission

This car has a 14 inch road clearance, capable of making 55 miles per hour, and has a detachable tonneau. Write for descriptive matter on the above models.

THE BUCKEYE MANUFACTURING CO., Anderson, Indiana

Members American Motor Car Manufacturers' Association, Chicago



### The Hartford Dunlop Automobile Tire



The Hartford Rubber Works Co., Hartford, Conn.



**Baker Electrics** 

embody every possible good feature required to make them what they are so frequently called —



### The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum

and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency

and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.

We desire agents in a few important cities not yet covered. Write for particulars.

IMPERIALS, STANHOPES, SURREYS DEPOT WAGONS, BROUGHAMS

The Baker Motor Vehicle Co. 24 Jessie Street :: CLEVELAND, OHIO



Outside-Driven Brougham

Inside-Driven Brougham

### MICHELIN

### Tires of the Highest Class

Mr. Wilbern sends the following unsolicited testimonial:

Cincinnati, O., Nov. 3, 1905.

MR. E. D. WINANS, Sec'y & Gen'l Manager, Michelin Tire Co. of New York.

Dear Sir:—Thirty thousand miles on Michelin tires, covering twelve countries in Europe, above the clouds in Switzerland, below the sea in Holland, from bull fights in Spain to chicken fights in England, down historic Rhine, and back again to the "land of grind organ and Monks." I have bought all kinds of tires, every known make; but the Michelin are the best, last the longest.

With pleasure I can recommend them to all tourists. Will tour again next spring and summer in Norway, Sweden, England, Ireland and Scotland, and will wear nothing but MICHELIN tires on my 40 H. P.

Very truly,
(Signed) Edward V. Wilbern. Hotchkiss.

Director "Providence Savings Bank and Trust Co.." Cincinnati, O.

If you want the Best, follow Mr. Wilbern and buy MICHELIN TIRES

### MICHELIN TIRE AMERICAN AGENCY, Inc.

E. D. WINANS, Gen'l Mgr.

6 WEST 29TH STREET, NEW YORK

Telephones: 760-761 Madison Sq.

Branches in principal cities of United States

# Pantasote

#### An Ideal Material for Automobiles and Motor Boats



For Seatings—Pantasote Leather wears better than the natural hide, it contains no oils to dry out, and is impervious to weather; will not crack, peel or chip.

For Canopy and Cape Tops—Pantasote Top Materials give a handsome finish to the car, are more durable than the real hide, absolutely water, stain and grease-proof, and vastly superior to the various rubber and inferior imitations of leather, as

Pantasote always remains soft and pliable, and is not affected by climatic conditions.

Send for samples of the new and complete 1906 line

### The Pantasote Company

11 Broadway NEW YORK 926 Monadnock Bldg. CHICAGO

### PENNSYLVANIA ROCLINCHER

"No car is faster than its tires."

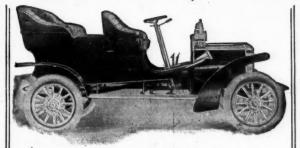


"Tire troubles place a fast car in a class with the farm wagon."

PENNSYLVANIA RUBBER CO. JEANNETTE, PA.

# Northern

The same practical advantages which distinguished the Northern Touring Car for 1905 will characterize the 1906 products, viz.: Quietness in operation, ease of riding and remarkable freedom from vibration and dust.



Silent Northern Touring Car, 20 h. p., 5 passengers, 4-inch tires, gas and oil lamp equipment, \$1,800

The Silent Northern still stands alone as the car of simplest and most compact mechanism. Its encased mechanism, three-point motor support, and 24-inch fly-wheel with fan blades cast integral have demonstrated again and again their efficiency and vital importance.

¶ Power applied direct to rear axle -only one universal joint. No belts -no chains -no gaskets. No truss rods -no strut rods -and no side levers.

1906 MODELS—Model "K" 30 h. p. Touring Car with gas and oil lamp equipment, \$3,000. 20 h. p. Limousine, \$2,500. 20 h. p. Touring Car with gas and oil lamp equipment, \$1,800. 7 h. p. Sturdy Northern Runabout with lamp equipment, \$650.

Write at once for Circular 14 containing important advance information.

#### NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Member Association Licensed Automobile Manufacturers.

KELLEY-HUNTER CO., 1449 Michigan Avenue, Chicago Agents

We will exhibit at Madison Square Garden only January 13th to 20th, 1906.

### FISK MECHANICALLY FASTENED TIRES

are receiving more favorable comment today from competent judges of tire qualities than all other makes combined.

It is because we know how to build tires that will insure the user Comfort, Safety and Tire Economy.

No matter how much you have enjoyed your car in the past, Fisk Tires will surely add to your pleasure by physical and mental relief — and lessen your tire maintenance by half.

They Ride Easier, Wear Better, and Have Been Proven Safer Than Any Other Tire Made.

Have you ever tried them?

### The Fisk Rubber Co., Chicopee Falls, Mass.

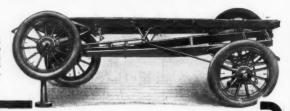
-BRANCHES

New York, 754 Seventh Ave. Bosten, 226 Columbus Ave. Springfield, 40 Bridge St. Philadelphia, 138 N. Broad St. Minneapolis, 704 Hennepin Ave. Atlanta, 103 N. Pryor St. Syracuse, 423 S. Clinton St. Buffalo, 893 Main St. Cleveland, 318 Euclid Ave. Los Angeles, 1034 Main St. Detroit, 254 Jefferson Ave. Chicago, 1251 Michigan Ave. Kansas City, 1330 Main St. St. Louis, 8908 Olive St. San Francisco, 114 Second Ave.

You can deal with us from a distant point the same as at the factory.

"A Mechanical Masterpiece"

Front wheel and opposite each raised over a foot.



#### "Only Hit the High Places"

Good old familiar automobile talk-means speed that's the next thing to flying.

But there is a time when it ceases to be a joke.

Anyone that has ever sped over country roads in a machine depending altogether on springs for its flexibility knows what "hitting the high places" means-keeps the people in the tonneau in the air, occasionally "hitting the high places" of the machine.

And what does it do to the machine of the rigid type? Does it seem reasonable that the constant pounding and inevitable twisting, binding strains are good for costly

The picture here shown demonstrates that the running gear of the Marmon adjusts itself naturally to all road conditions. It rides into depressions and over bumps without subjecting the mechanism to binding, twisting strains. And at the same time it affords its passengers a freedom from jar, jolt or vibration-a very luxury of motion-unknown in any other car, regardless of price or prestige.

This flexibility is supplemented by full elliptic springs (which bear no driving strain), but it is primarily due to the exclusive patented feature, .

#### Double Three-Point Suspension

Luxurious cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. Over the roughest roads, the power plant and rear axle are maintained in perfect alignment. shaft drive (without universal couplings) and an inner driving axle that bears no weight, deliver a higher percentage of power to the wheels than is possible in any other scheme of transmission.

The natural flexibility of the Marmon conserves the strength of all parts. Its considerate treatment of the tires is a thing that Marmon owners never fail to commend.

The Marmon oiling system is unfailing; simple; has no adjustments. Starting and stopping with the engine a constant, a uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. One gallon of oil runs the Marmon from 600 to 1,000 miles.

Four cylinders; air-cooled; stylish, strikingly handsome and very quiet. Replete with features that appeal instantly and forcefully to all who seek a high-grade car.

Write for Booklet No. 1 and get acquainted, at least, with the one really modern automobile.

We shall demonstrate at the Armory Show, New York.



Established 1851

Indianapolis, Ind.

Members American Motor Car Manufacturers Association



### KNOX CARS

### Deliver the Goods

They run all day long any day in the year, being air-

cooled by the only perfect system extant.

They furnish the quickest and the cheapest method of

local delivery.

Every wide-a-wake merchant should

#### Buy a Knox Waterless Car Save Money and Be Up-to-Date

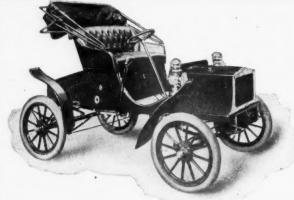
A handsome Knox car is an effective advertisement of any business. Besides, it is sure to give absolutely reliable service.

Concise pamphlet, "Commercial Car Tests," on request. Free demonstrations on request at our agents. Agents in all principal cities.

#### KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars We Exhibit in New York at Madison Square Garden Only, Jan. 13-20, 1906 Member of A. L. A. M.





Minus Top 1906 \$600 Model "D"

WHEEL-POST CONTROL, ROLLER BEARINGS to rear axle ANY TIRES, 28x3, Pneumatic, Solid or any other kind Equipment includes Lamps and Horn

OUR 1906 LINE in addition to Model D, will consist of two other models yet to be announced

Dealers who know the value of handling a GOOD CAR at a LOW PRICE will write us at once regarding 1906 agencies

VESTERN TOOL WORKS GALESBURG



#### CUMMER LUMBER COMPANY.

"OUTHARUS AND LUMBERMENS CODELUSE.



8-18-0

The Continental Caoutchouc Co.,

43 Warren St., New York, N.Y.

Gentlemen:-

I feel it is due you to give you my experience with your tires

During the month of July I ran this car 1600 miles on a tour which took me through New Jersey, and over the 1905 Glidden Cup Route through New England. I was not a participant in the Touring Contest, but simply selected this route as it appealed to me. During this run I had but one puncture, caused by a nail; and, with this exception, the tires were not pumped up on the entire run, and are apparently in as good condition as when I started. The car was fully loaded at all times, and on several days was driven through very muddy roads.

I take pleasure in stating that I am highly pleased with the results secured from your tires, and I feel under great obligations to Mr. Fred. E. Gilbert of this City, who handles your goods, for advising the use of Continental Tires on my car.

This letter is all the more sincere from the fact that it was not solicited by you in any way.

Yours very truly,

a. G. Cummar

. . . . . .

### Warm Florida

### **Cool New Hampshire**

during the most trying season of the year for tires was a pleasant trip. That was due to the use of

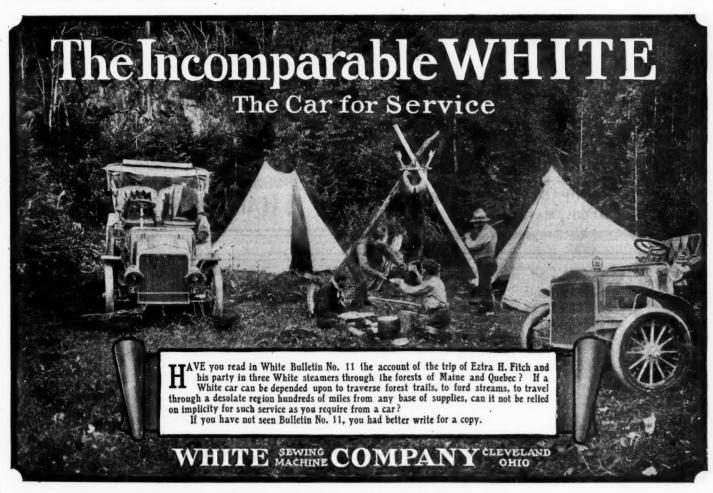


Were your trips as pleasant this season?

#### The CONTINENTAL GAOUTCHOUC CO.

EMIL GROSSMAN, Gen'l Mgr.

43 Warren St., New York
Factory, Hanover, Germany





### Electric own Carriages

The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneu-

matic Tires, 5-Speed Control, Special Exide Battery and other improvements. With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75





Elegant in Finish Luxurious in Appointments Built by Skilled Workmen from the Best Materials Obtainable

#### THE SIMPLEST GASOLENE CAR IN THE WORLD

-both as to construction and control, and the easiest to operate and maintain.

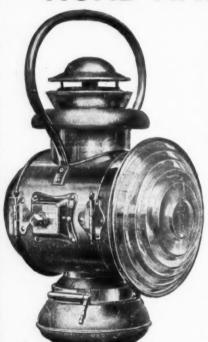
"Marks a New Era in Automobile Construction"

40-45 Horse Power, \$5,000

CORWIN MANUFACTURING COMPANY

PEABODY, MASS., U.S.A.

### ALWAYS A BRIGHT ROAD AHEAD



When you are back of the

### Ham" Lamps

Our TOURIST Lamp for 1906 is the greatest light pro-ducing oil lamp ever made.

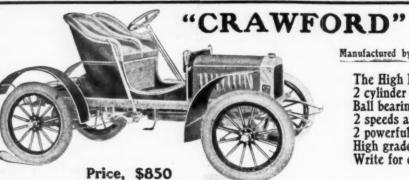
#### See the Lens?

Excellent emergency lamps when youracetylene lamps fail you.

Profit by our 35 years' experience and avoid lamp troubles by in sisting on having "HAM" Lamps on your car.

Write for booklet showing complete line.

. HAM MFG. CO. ROCHESTER



Manufactured by the originator of the well known "Crawford" bicycles

MOTOR

The High Powered Runabout for City and Country Use. 2 cylinder upright actual 10 h. p. Wheel base, 78 inch. Ball bearings throughout.

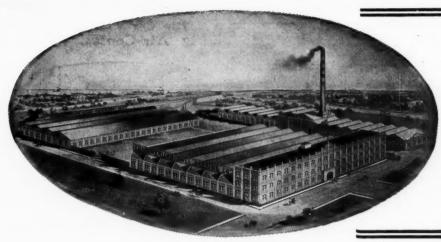
2 speeds ahead and reverse controlled by one lever. 2 powerful foot brakes.

High grade workmanship throughout. Write for catalog.

VFORD AUTOMOBILE CO.

Main Offices and Factory: Hagerstown, Md.

New Amsterdam Motor Transportation Co., 152 W. 56th St., Sole representatives for New York City and vicinity]



The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO. L. S. & M. S. Railway and Edgewater Park GLEVELAND, OHIO, U. S. A.

### Hill Precision Oilers

The first requisite in a mechanical oiler is efficiency. To be efficient, it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is economy.

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

#### THE OSCAR LEAR AUTOMOBILE CO.

Automobiles Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,
THE OSCAR LEAR AUTOMOBILE CO.

#### THE STEEL BALL COMPANY

840 Austin Avenue

CHICAGO



### "GEECEE," The Sparker

This battery is unequaled as an ignitor

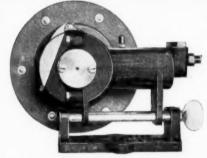
It is higher in capacity and voltage than any wet battery now on the market.

The Electorlyte (acid) is in suspended form. It is made dry by a special process, enabling it to retain its moisture indefinitely.

Therefore it will never shock you by leaking out and ruining clothing, connections and anything else it comes in contact with. You have no such protection in the use of a wet battery.

#### Royal Battery Go. NEW YORK

National Sales Corporation, Factory Sales Mgrs., 256 Broadway, New York



### The P. T. C. Power Tire Pump

It is designed to inflate pneumatic tires by POWER driven by friction from fly wheel. Always in place. Started by turning a screw. Write for circular.

The Pacific Tucking & Manufacturing Co.

471-3 18th Street, BROOKLYN, N. Y.

### ADAMS=FARWELL Revolving Air-Cooled Motor



We have not operated our Motors over good and bad roads for seven years without arriving at definite results. The results are mentioned in letters received from some of our customers who own 1904 and 1905 cars.

20-25 horse power and 40-45 horse power.

Six Models, \$2,000 to \$4,000
Chicago Salesroom: ... 1536 Michigan Avenue

THE ADAMS COMPANY
Dubuque, Iowa, U. S. A.





### Wolverine D

Double-opposed Motor Under the Hood Bevel Gear Drive 3-speed Sliding Gear Transsmission 18 Horsepower (Actual)

Price, \$1,250.00

Wolverine Automobile and Commercial Vehicle Company

Dept. "C."

Dundee, Mich.

### **MOLINE for 1906**

Model "A" 30-36 H. P. \$2500.00 Model "C" 18-20 H. P. \$1750.00

Both the above have four cylinder vertical, water cooled motors. Cylinders cast in pairs. Valves all mechanical and interchangeable. Pressed steel frames. Three speeds forward and reverse. Sliding gear transmissions. Mechanical oilers. Storage cells for ignition.

Model "G" 16 H. P. \$1000.00

Double cylinder opposed motor under body with single chain drive. Planetary transmission, no internal gears. Engine bearings of liberal dimensions and easily adjustable. Mechanical oiler. New design of water pump. Double side entrance detachable tonneau body.

All three Models have cylinders, pistons and piston rings accurately ground to size.

All three Models have double side entrance bodies with divided front seats.

All three Models have mechanical oilers that force oil direct to the bearings—not force it part way and then let it drop the rest of the way.

All three Models are top notch value for the money. AND WE CAN TAKE CARE OF ONLY A FEW MORE DEALERS.
Advance circular ready for distribution.

### Moline Automobile Co.

EAST MOLINE, ILLINOIS, U.S. A



Save Time, Money and Trouble and GET MOST WORK out of

### MOTZ TIRES

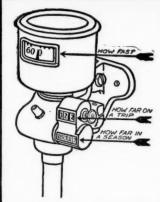
Solid Rubber or Cushion Types and made to fit any standard clincher rim in which pneumatic tires are used

Types lincher e used



RESILIENT AND
"THERE WITH THE WEAR"

The Motz Clincher Tire & Rubber Co. AKRON, OHIO, U. S. A.



### THE UTO = METER

will tell how fast it can travel, how far it travels on a trip, how far in a season.

This information will be accurate and will help to determine positively

### SPEED and DISTANCE

enabling you to get a line on the car.

enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the AutoMeter and thousands more will use it next year. It has become an indispensable adjunct to a car.

Write for a catalogue now and get ready for next year.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1631 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.



know will satisfy your customers instead of taking chances on "just as good" lamps. YOUR profit is as MUCH or MORE on Solars, and your customers "stick." Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO.

KENOSHA, WIS. New York Office, 11 Warren St.



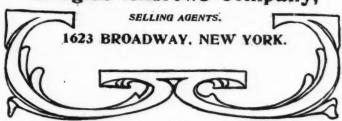
1906 Models Ready December 15th.

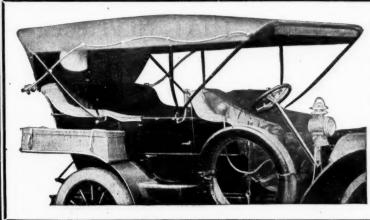
16 H. P. \$2,000.

25 H. P. \$2,500.

40 H. P. \$4,500.

Douglas Andrews Company,





'06 Cars Won't be complete unless equipped with a top of some make. Why not specify LONDON TOPS? They are absolutely dependable as to design, material, fit and workmanship.

Nothing better can be produced.

London Auto Supply Co., 1229 Michigan Ave.

Chicago Agents for the

St. Louis Supplementary Spiral Springs

Self-Starting from the Seat
(With Make and Break Ignition)

# theson

"America's Finest Motor Car" 1906 Models-40 and 60 H.P.

Our New Factory now building, in.... WILKES-BARRE, PA. will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.

MATHESON MOTOR CAR CO. ......Holyoke, Mass.



and bright the new cleanser

Elbow grease and common soap will not preserve the polish of an automobile. It may remove the dirt-but the shine goes too. Mobo is unlike any other substance for cleaning automobiles, preserving and restoring the original lustre; removing grease and travel stains. Mobo is a preserver—it prevents blistering and cracking of the painted surface. Absolutely harmless to the hands Can be used on the leather work of the automobile (also harness) as well as the wood and metal work.

Put up in 2 lb. and 8 lb. cans; also in tubs, half barrels and barrels. If your dealer hasn't it—tell us, we will see that you do get it.

JOHN T. STANLEY 638 W. 30th St. **NEW YORK** 

# ELECTRIC-

Broughams Victorias

Landaulets Station Wagons

Coaches

Ambulances, etc.

Express Wagons **Delivery Wagons** Baggage Vans, etc.

Brewers' Trucks

Dumping Trucks

Machinery Trucks Hoisting Trucks, etc.

Over One Hundred Standard Designs, One to Six Tons Capacity

# VEHICLE EQUIPMENT CO.

Sales Department, General Office and Works LONG ISLAND CITY, NEW YORK

Largest Builders of Electric Vehicles in the World

# FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

# KOKUK FABRICS

GUARANTEE

With All Goods Bearing This

TRADE MARK

TRADE -KOKUK MARK-

MANUFACTURED EXCLUSIVELY BY

74 Pearl Street, BOSTON, MASS.

REGISTERED

HAVE YOU SEEN THE NEW

**KOKOMO** 

OFFIC



It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship
throughout.
Write us for full particulars.

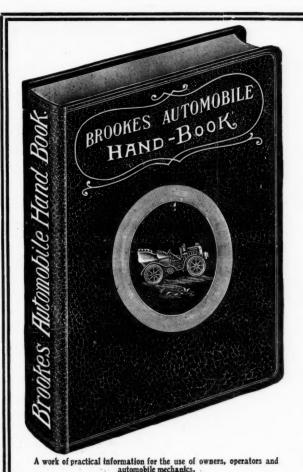
KOKOMO RUBBER CO.,

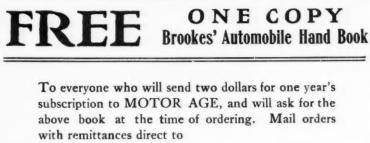
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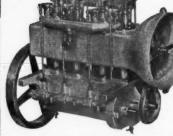
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Total bearing surface on Crank Shaft, 10½ inches.

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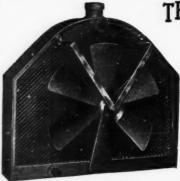
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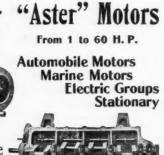
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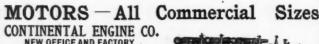
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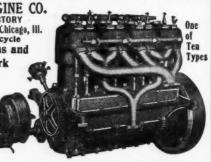




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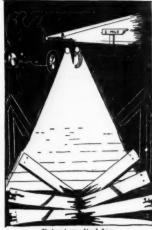
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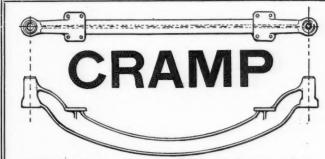
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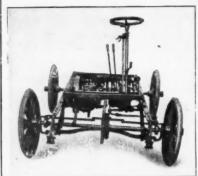
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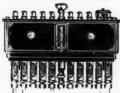
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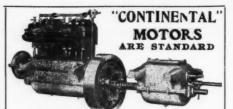
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1905 ROYAL tourist cars in excellent condition; taken in trade for 1906 Royals. We have several of these cars for prompt delivery. C. A. Duerr & Co. (Incorporated), 1787 Broadway, New York City.

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Through a business deal we obtained a few standard \$1,400 side entrance touring cars, 20 H. P. double opposed engine, and \$750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

FOR SALE—2-cylinder Hoffman, 4x5, upright

FOR SALE—2-cylinder Hoffman, 4x5, upright motor, \$75; cost \$150. A. M. Symonds, 901 N. Fairfield Ave., Chicago, 111.

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1903 Oldsmobile, with top; in good running order. Write for description and make me an offer. Address Shaw, 26 Goodrich St., Buffalo, N. Y.

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WILL TRADE quarter section smooth land in western Kansas wheat belt for automobile. F. L. Martin, Hutchinson, Kan.

1905 White Steamer, equipped with canopy top, glass front, Gray & Davis mirror lens headlights and generator; baskets, autometer, electric light for gauges. Address Box 267, Portland, Me.

### 1906 Light Delivery Car That Car of Quality

2 Cylinders Opposed. Capacity 1500 lbs.

Air Cooled. Speed 15 Miles per Hour.



THE DEPOT CARRIAGE AND BAGGAGE COMPANY

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THE LOGAN CONSTRUCTION CO., Chillicothe, Ohio.

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It is doing more work than two wagons, and we are running it about 14 hours a day.

The car is simply O. K.

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THE DEPOT CARRIAGE & BAGGAGE CO.

### "Logan" MODEL I, WILL DO AS WELL FOR YOU

Write for Catalogue A 121.

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AUTOMOBILE DEALERS EVERYWHERE—
We have a live proposition to offer dealers
and agents in every town and city to handle
our ready to deliver cape cart tops. Auto Top
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FOR SALE—Detachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

1906 Olds, Model B; curve dash; blue and yellow; used but little. M., care Motor Age.

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